For CONTENTS, see pp. iii and iv of Cover.

pp. 345-400. References pp. xlvii-lxxx.] [June 15, 1916.

TROPICAL DISEASES BULLETIN

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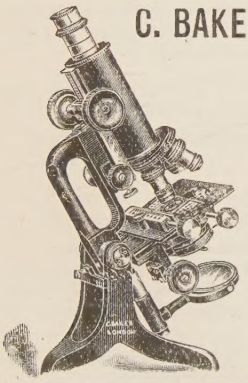

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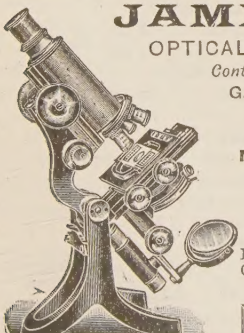

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TROPICAL DISEASES BULLETIN.

Vol. 7.] 1916. [No. 6.

HELMINTHIASIS.

LEIPER (Robert T.). **Report on the Results of the Bilharzia Mission in Egypt, 1915. [Part 3.]**—*Jl. R. Army Med. Corps.* 1915. Sept. Vol. 25. No. 3. pp. 253–267. With figs. 41–55.

This paper, which is the third part* of the Report of the War Office Bilharzia Mission, deals with the development of the miracidium in the intermediate host, the penetration of the definitive host and the development in the definitive host. The writer describes the development in the intermediate host as follows :—

"The Bilharzia miracidium gives rise to a sporocyst, which in turn produces daughter-sporocysts. After leaving the mother-cyst, the daughter-sporocysts migrate into the tissue of the digestive gland and grow rapidly. They become greatly elongated and eventually ramify throughout the organ, so increasing its bulk that an infected Planorbis can be detected at a glance. The colour also of the organ is changed. In *Planorbis boissyi* the digestive gland is dark brown or black, but when infected this changes to ochre. The ends of the daughter-sporocysts are solid, but the walls of the tubular bodies are very delicate and transparent, so delicate that it is impossible to dissect a complete sporocyst free from the tissues. As the cercariae develop within them, the sporocysts may become markedly constricted by the host tissue, and a certain amount of multiplication may possibly occur through cission. These sporocysts appear to absorb their nutriment through their walls, as they have neither oral sucker nor alimentary canal. The glandular tissue of an infected organ disappears apparently through pressure atrophy. The sporocysts are capable of travelling by wriggling movements. The cercariae leave the sporocysts through simple rupture of the over-distended wall. They are discharged from the mollusc in 'puffs,' a number being periodically shot into the water. This discharge occurs quite independently of the passage of faeces by the snail.

"In Bilharzia as in all digenetic trematodes the terminal phase of development in the intermediate host is the cercaria, and this alone is the infective stage."

[* The first two parts were summarised in this *Bulletin*, Vol 6, pp. 437–442. Some of the illustrations reproduced here were published with those parts.—ED.]

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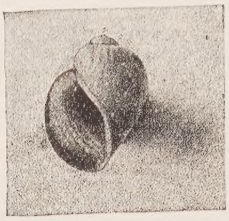

Fig. 1A. *Bullinus cortortus.*

Fig. 1B. *Planorbis boissyi.*

Fig 2.

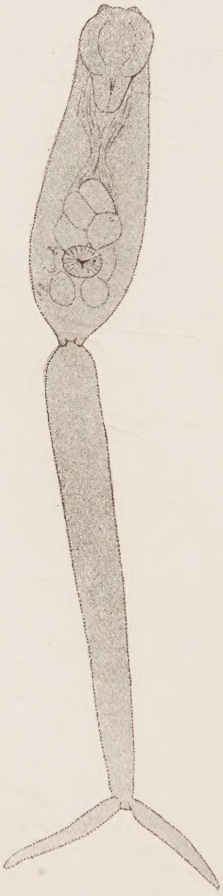

Fig. 3.

Fig. 4.

Various Bilharzia cercariae found in molluscs around Cairo.

A short description of the Bilharzia cercaria is given, and Leiper cites as diagnostic characteristics its possession of a bifid tail without cuticular keels and the absence of a muscular pharynx and pigment eye-spots. Having both a bifid tail and a ventral sucker, this cercaria must, according to LÜHE's classification of the cercariae, be placed in the Furcocercous group. Regarding the penetration of the skin and mucous surfaces by the cercaria, the writer reiterates some of the experimental evidence which was given in a former part of the Report.

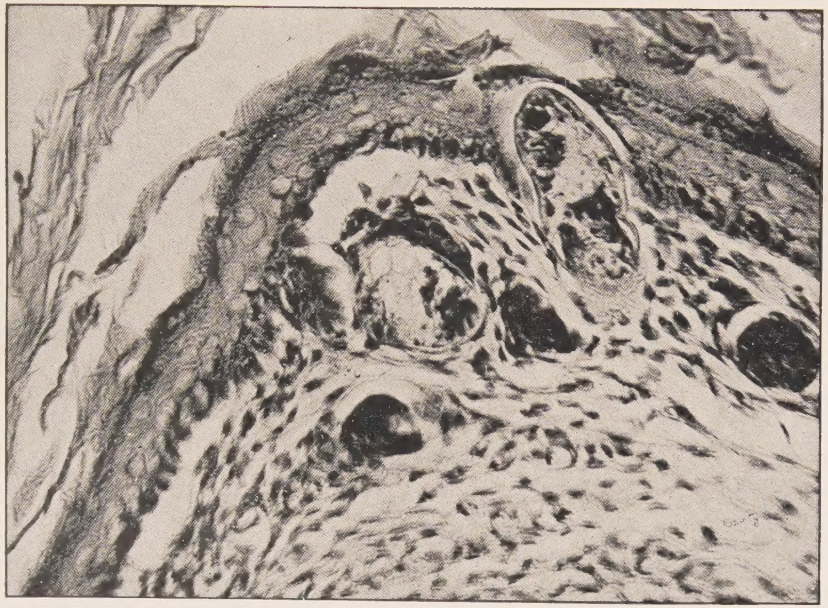

FIG. 5

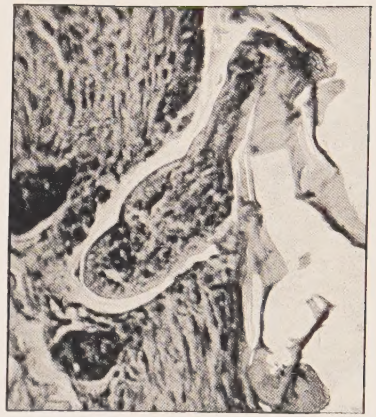

FIG. 6.

Sections of skin of a newly born mouse which had been immersed for half an hour in water containing large numbers of Bilharzia cercariae.

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He considers that the cercariae are attracted by the warmth of the body as only a "slight degree of penetration" of the skin, by the cercariae, took place when a dead mouse was immersed in fluid containing them. This was in marked contrast to the readiness with which the cercariae penetrated the skin of a living animal. In this latter case the fluid, which at the commencement of the experiment was "full of Bilharzia cercariae," was found to contain "only a few cercariae and a large number of *detached* tails" half an hour later. The development in the definitive host is characterised by gradual growth and the parasite undergoes no further metamorphosis. As growth proceeds the various organs become differentiated, and the recognition of the sexes becomes possible at an early date. The males being "recognisable from the females by their greater breadth and the stouter formation of the ventral sucker." The route taken by the parasite in its journey from the skin to the portal system was still being investigated when the Report was written. Some excellent figures illustrate the text, and the Bibliography of Bilharziasis is completed in this part. R. P. Cockin.

LEIPER (R. T.). **On the Relation between the Terminal-spined and Lateral-spined Eggs of Bilharzia.**—*Brit. Med. Jl.* 1916. Mar. 18. p. 411.

In this note Leiper states that there are marked differences in the Bilharzia worms producing terminal and lateral-spined eggs. These differences may be conveniently summarised thus :—

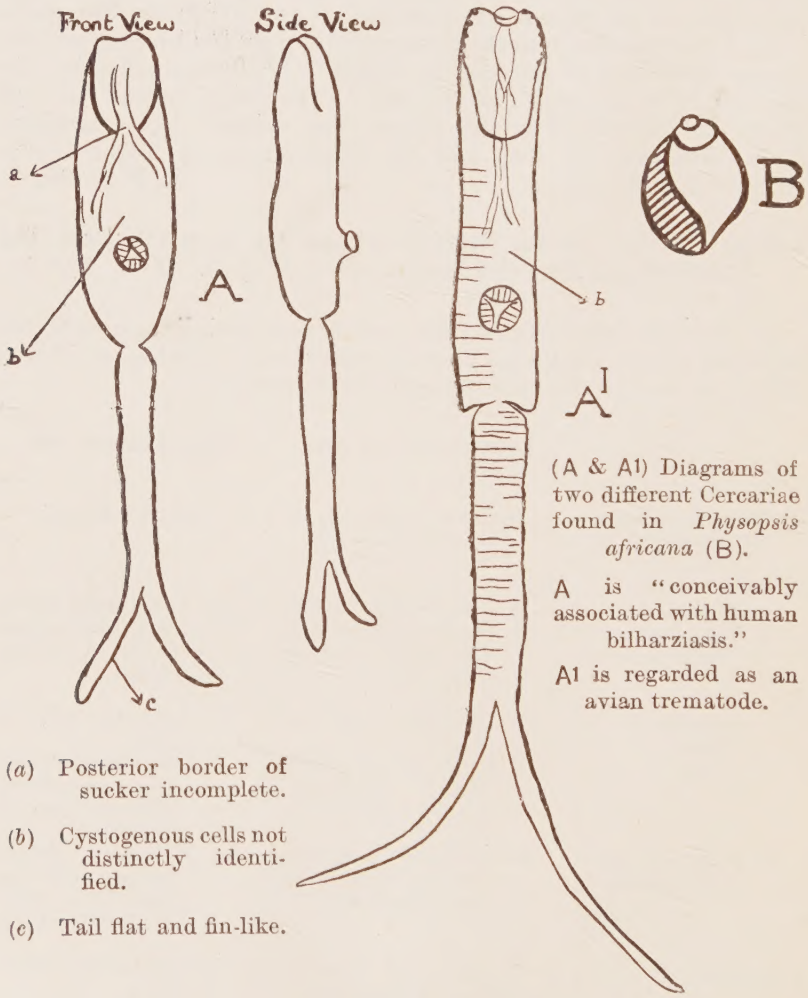
	Terminal-spined ova.	Lateral-spined ova.
1. Mollusc acting as intermediate host.	1. *Bullinus contortus*, or *Bullinus dybowski.*	1. *Planorbis boissyi.*
2. Adult males. *a.* Testes. *b.* Terminal caecum.	2. *a.* 4 or 5 large testes. *b.* Short, owing to lateral caeca uniting late.	2. *a.* 8 or 9 small testes. *b.* Long, due to lateral caeca uniting early.
3. *a.* position of ovary. *b.* uterus.	3. *a.* Posterior half of body. *b.* Long and containing many terminal-spined eggs.	3. *a.* Anterior half of body. *b.* Short and invariably containing only one lateral-spined egg.
c. Position of yolk-glands.	*c.* Limited range in the posterior quarter of the body.	*c.* Extensive distribution over the posterior two-thirds of the body
4. Species.	4. *Schistosomum haematobium* (*Sensu stricto*).	4. *Schistosomum mansoni* (?)
5. Patholog. lesions.	5. Vesical bilharziasis.	5. Rectal bilharziasis.

The writer also calls attention to differences which characterise the cercariae, both in regard to the sucker and the length of the tail.

R. P. C.

CAWSTON (F. G.). i. **Schistosomiasis in Natal.**—*Jl. Trop. Med. & Hyg.* 1915. Nov. 15. Vol. 18. No. 22. pp. 257–258. With 4 text-figs.*
ii. **Bilharziosis in Natal.**—*Brit. Med. Jl.* 1915. Nov. 20. p. 746.
iii. **Bilharziosis.** [Correspondence.]—*Lancet.* 1915. Dec. 25. p. 1427.

In the above articles Cawston describes the results of the attempts which he has made to work out the life history of *Schistosomum haematobium* in Natal. Throughout his work he used only the terminal-spined ova obtained from a case of vesical bilharziasis, which was



(A & A1) Diagrams of two different Cercariae found in *Physopsis africana* (B).

A is "conceivably associated with human bilharziasis."

A1 is regarded as an avian trematode.

(*a*) Posterior border of sucker incomplete.

(*b*) Cystogenous cells not distinctly identified.

(*c*) Tail flat and fin-like.

under his care; and he notes that "lateral-spined ova do not occur, as far as I am aware, in the locality in which these experiments were conducted." In co-operation with Dr. WARREN (the Director of the

*[Dr. Cawston has substituted the above illustrations for those which accompanied his paper in *Jl. Trop. Med. & Hyg.*]

Natal Government Museum) fresh-water snails, collected from a known-infected pool, were submitted to infection with the miracidia from these ova. A month later Dr. WARREN reported that he had discovered sporocysts containing bifid-tailed cercariae in the liver of one of these snails [*Physopsis africana.*] The cercariae were similar to those described by LEIPER and ATKINSON [see this *Bulletin*, Vol. 6, p. 296], and were possessed of two suckers—oral and ventral—and a bifid tail, which "showed no indication of cuticle covering." No pharynx was noted, and pigment spots were absent.

Cawston suggests the name of *Cercaria secobii* for this form.

Cawston subjected a guinea-pig and a mouse to the "washings" obtained from the infected snails, for half an hour a day for three days. The mouse, however, escaped before the experiments were completed. The guinea-pig, which died six weeks after the attempted infection, had a good deal of free fluid in the peritoneal cavity at the post-mortem examination, but no bilharzia worms were found in the blood vessels.

The author recommends the removal of decomposing reeds from bathing pools, with the object of affording fewer sites for the development of the intermediate host. Treatment of vesical bilharziasis, by the author, has not been attended with great success; and he considers male fern and lavage of the bladder to be useless. He believes diuretics and urinary antiseptics to be of value in so far as they prevent bacterial complications.

In the *British Medical Journal* article it is stated that "bilharziasis in cattle has not been demonstrated in Natal." R. P. C.

BRISCOE (John Frederick). **Bilharziosis.** [Correspondence.]—*Lancet.* 1916. Jan. 15. pp. 155–156.

This note concerns twenty cases of vesical bilharziasis which were under the writer's observation during the Boer War. The patients were principally from the Argyle Regiment and had been stationed in the Rustenburg District of South Africa. The ova found in the urine were uniformly terminal-spined. The faeces were not examined microscopically for ova. The various forms of treatment employed included iron, male-fern, methylene blue and various urinary sedatives. In one case lavage of the bladder with quinine solution [strength of solution not stated] appeared decidedly beneficial.

Owing to the discharge of the patients, as "medically unfit for further service," the writer was unable to pursue investigations regarding the life-history of *S. haematobium*, which he had contemplated. R. P. C.

JOB (E.). **Note sur la bilharziose au Maroc.**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1915. Dec. 30. 3 ser. 31 Ann. No. 39–40. pp. 1282–1288.

In a period of thirty-one months Major Job states that he has met with thirty-four cases of bilharziasis at the Military Hospital at Casablanca. The majority of these cases occurred amongst the black troops, and he is of opinion that the disease has been introduced into Morocco by them. Up to the present time, only five cases have been

noted amongst the Europeans. The greater portion of the cases were suffering from vesical bilharziasis, and rectal symptoms were only recorded on three occasions.

The author notes five cases in which bilharzia ova were found in the faeces. In only one of these were the ova furnished with the lateral spine. All the other cases, both vesical and rectal, displayed the terminal-spined ova of *S. haematobium.*

Major Job calls attention to the presence of albuminuria in latent vesical bilharziasis, and emphasizes the value of this symptom in the detection of these latent cases in Senegalese troops.

Regarding the escape of the Miracidium from the ovum, the author observes that dilution of either urine or faeces with water is not essential. In an undiluted specimen of urine [apparently of very low specific gravity and only slightly coloured] he noted the miracidia escape from the ova, the free-swimming miracidia and the empty egg-shells. On another occasion, whilst searching for amoebae, he saw miracidia moving freely in a fluid stool. Concerning treatment, the author considers that it, at present, must be purely symptomatic. He gave intravenous injections of neo-salvarsan (0·6 gm.) in two of his cases and found this treatment quite ineffective. R. P. C.

Bouilliez (Marc). **Les bilharzioses dans le Moyen-Chari (Territoire du Tchad). Recherches expérimentales.**—*Bull. Soc. Path. Exot.* 1915. Oct. 13. Vol. 8. No. 8. pp. 604–610.

Bilharziasis—both vesical and intestinal—appears to be widespread in the whole of those districts to the east and south-east of Lake Chad, and especially is this found to be so in that area drained by the River Shari.

Statistics as to the degree of its incidence are, however, unreliable; as the types of the disease are generally benign and it is rarely that medical aid is sought.

Dr. Bouilliez has been fortunate in obtaining an indication of the probable degree of incidence in his examination of the scholars at the recently opened school at Fort Archambault. His examination of the thirty-two scholars—who were drawn from the principal villages around— was made eight days after the school was opened, and resulted in his finding twenty of them with ova in the urine and one only with eggs in the faeces.

The terminal-spined eggs of *S. haematobium* were found in all the vesical cases, with one exception. In this latter case, repeated examinations of both the urine and faeces were made, and each time the lateral-spined ova of *S. mansoni* were noted in the urine; and the result of the examination of the stools was invariably a negative one. With the material at his disposal Dr. Bouilliez made a series of attempts to bring about the direct infection of various animals. These results were uniformly negative.

In testing the resistance of the ova to weak solutions of hydrochloric acid, he found eggs containing living embryos after 6–8 hours' exposure to a one per thousand solution of the acid.

Neosalvarsan and emetine hydrochloride were used, with a view to testing their efficacy in the treatment of this infection, but no definite results were obtained. R. P. C.

BAUJEAN. **Sur un cas de transmission de bilharziose intestinale.**—*Bull. Soc. Méd.-Chirurg. Indochine.* 1915. July. Vol. 6. No. 7. pp. 248–253.

The possibility of the direct transmission of intestinal bilharziasis from husband to wife is assumed by the writer of the above article; and the following deductions are drawn from his observations on the case:—

1. That, since Madame X had resided for thirteen years in non-endemic localities—France, Tonkin and Cambodia—and had not during that period, or previously, manifested any symptoms of the disease; and as the only infecting agent known in those localities was her own husband, therefore she acquired the disease by direct transmission from him and not from any outside medium.

2. That *Schistosomum mansoni* has no need of an intermediate host (mollusc, fish or other) for the completion of its evolution. [Recent observations on the life history of *S. mansoni* do not confirm these conclusions.]

R. P. C.

CHENHALL (Wm. T.). **Bilharziosis, complicated by Adeno-carcinoma of the Female Bladder.**—*Med. Jl. of Australia.* 1915. Oct. 15. Vol. 2. 2nd Year. No. 16. pp. 359–360.

This paper gives the clinical, surgical and pathological notes on a case of vesical bilharziasis occurring in a ship's stewardess, who had been sailing from Java to Singapore, and who was admitted into the Royal Hospital for Women, at Sydney, in the early part of 1914.

The case terminated fatally, and, at the post-mortem examination, an adeno-carcinomatous growth, about the size of a walnut, was found surrounding the vesical portion of the urethra.

Extensive infiltration of the bladder wall and marked enlargement of the right kidney and ureter were also noted.

[Professor FERGUSON, of the Kasr-el-Ainy Medical School, Cairo, has called attention, on several occasions, to the relative frequency of this complication in vesical bilharziasis. The importance of the paper appears to lie rather in the fact that infective cases of this disease are being imported into Australia.]

R. P. C.

REED (Alfred C.). **Schistosomiasis japonica.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1915. Nov. Vol. 3. No. 5. pp. 250–273.

In the account of Asiatic schistosomiasis, which is given by Reed in the above article, attention is called to the fact that the disease is spreading in the localities in which it is endemic, and that it is now to be regarded as a menace to Western countries.

The endemic areas referred to are five of the provinces of China, which form part of the Yang-tze basin—Hunan, Honan, Hupeh, Anhwei and Kiangsi—and four of the provinces in Japan—Yamanashi, Hiroshima, Okayama and Saga. In addition to these there are smaller foci of infection scattered throughout Japan and around the infected regions of China, and an infective focus undoubtedly exists in the Philippine Islands. [WOOLLEY has reported one case of this disease occurring in a Filippino, who had never left the Islands.]

Cases imported into both England and the United States, from endemic areas, have been reported in the past; but so serious a view, in regard to the possibility of the introduction of the disease into the latter country is taken that Public Health Regulations have been drawn up (and are in force), which exclude further cases, where such occur in immigrants, and arrange that in the case of citizens "such quarantine oversight as will secure absolute disinfection of the stools" is enforced.

The author gives the clinical and pathological features of the disease, and a description of the parasite producing them. Regarding the incubation period in this disease, the author observes that, whilst this is usually given as from ten to fifteen days, LANNING notes it to lie between twenty-four and forty-eight hours. LANNING's observations were carried out on seven cases of the disease, which occurred amongst the sailors of the United States gunboat "Quires" (which was on patrol duty on the Yang-tze Lake) and which thus afforded him an excellent opportunity for exact and close observation. Notes on nine cases of the disease, admitted to the Yale Hospital, Changsha [which stands on a tributary of the Yang-tze River, to the south of Lake Tong-ting, in the province of Honan] in the year ending 1st May, 1915, are given. All were in Chinese subjects. The bibliography of the disease, up to August, 1914, is included in the article.

[This article appears to have been written previous to the publication of MIYAIRI and SUZUKI's researches on the life-history of *Schistosomum japonicum* and, consequently, of LEIPER and ATKINSON's confirmation of their results.]

R. P. C.

ASCANIO RODRIGUEZ (J. B.). **Sobre un caso de Bilharziasis hepatica.** [A Case of Bilharziasis of the Liver.]—*Gaceta Med. de Caracas.* 1915. Vol. 22. No. 19. pp. 147–149.

An account of two cases, in which the symptoms consisted principally of tenderness with enlargement of the liver, and diarrhoea, followed by a fatal result from collapse. In the first case, which occurred in private practice, an autopsy was not obtained, so that the diagnosis remained somewhat in doubt. The symptoms, however, were extremely similar to those of the second one. In the latter, the patient was a man, aged 35 years, who three years previously had been taken with hectic fever, pain and tenderness of the liver, along with diarrhoea which was attributed to the presence of piles. A recovery was made from these symptoms more than once. In a second attack there was also cystitis with the passage of blood, for some days. The patient was treated by his then medical attendant with emetin, upon the supposition of amoebic dysentery and hepatitis. Finally he was admitted to hospital under the care of the author of the present paper and was placed upon expectant treatment. The stools showed no amoebae or flagellates, but on the other hand large numbers of ova of Uncinaria and *Bilharzia mansoni.* The urine contained bile pigment, but no ova or albumin. The patient died quietly in his sleep one night, before further treatment could be undertaken. At the autopsy, the portal vein was ligatured and removed,

entire, and in the contained clot were found a large number of living Bilharzia of both sexes. The blood that escaped into the abdominal cavity, when diluted with normal salt solution and centrifuged, did not furnish any examples of the parasite. Ova of Bilharzia and three miracidia were found in smear preparations of liver substance. In the bile no parasites were found.

J. B. Nias.

ARCE (Julian). **La Paragonimiasis en El Peru.** [Paragonimiasis in Peru.]—*Cron. Med. Lima.* 1915. Oct. Vol. 32. No. 628. pp. 249–254.

Paragonimiasis has increased considerably in Peru of recent years, according to the author of this paper, through the immigration of Chinese, and more especially of Japanese, workers. Alberto BARTON demonstrated in 1910 the existence of the first case in a Peruvian, who had superintended the work of a gang of 45 Japanese coolies, and three years previously recognised the disease in a Chinese stoker. The author has also met with three cases recently in his own practice, one of whom had been in contact with Chinese and Japanese coolies, and he therefore recommends that a quarantine should be instituted for the detection of this disease, amongst others, for all such arrivals.

J. B. N.

CORT (William Walter). **Egg Variation in a Trematode Species.**—*Jl. of Parasitology.* 1915. Sept. Vol. 2. No. 1. pp. 25–26.

Whilst working on the anatomy of *Pneumonoeces similiplexus* from the lung of *Rana pipiens*, the author measured more than two hundred eggs, from ten different individuals, with a view to the accurate determination of the average egg-size for the species. The range of variation was from 34μ to 40μ; and the average $37{\cdot}6\mu$.

At a subsequent examination of three specimens, from a frog from Oshkosh, Wisconsin, the author was struck by the apparent smallness of the eggs, and upon measuring two hundred of the eggs from these individuals, he found the range of variation was 30μ–$37{\cdot}4\mu$, whilst the average egg length worked out at $34{\cdot}2\mu$.

Apart from the difference in the size of the ova the rest of the characters used for specific diagnosis were identical in both groups of flukes.

The author points out that "this observation shows that a distinct variation may occur within a species in a character which has proved to be generally constant."

R. P. C.

GAIDE & RONGIER. **De la Sparganose oculaire en Annam.**—*Bull Soc. Méd.-Chirurg. Indochine.* 1915. Mar. Vol. 6. No. 3. pp. 93–95. With 1 plate.

Drs. Gaide and Rongier publish here the notes on two cases of undoubted, and one probable case of, ocular sparganosis which have come under their notice at the Central Hospital at Hué. [Hué is the capital city of Annam.]

They make the following observations :—

1. Ocular sparganosis occurs in Annam, where it was unrecognised until Dr. CASAUX called attention to the prevalence of the infection in the Tonkin delta.

2. The sparganum may be found encysted in other regions, around the eye, than the upper lid, and is not necessarily restricted to that specific site.

The authors wish to call attention to the possibility of the parasite occurring elsewhere in the body, as established by MANSON, SCHEUBE, IJIMA and MURATA. R. P. C.

CASAUX (J.). **A propos d'un nouveau cas (8e) de Sparganose oculaire.** —*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1914. Nov. Vol. 5. No. 9. pp. 374–377. With 1 plate.

In a communication made to the Congress of Tropical Medicine, at Saigon, Dr. Casaux called attention to the frequency with which ocular sparganosis was encountered in the vicinity of the Tonkin delta.

This report was based upon seven cases of this affection which had come under his observation, and the present article deals with an eighth case which he has since treated.

The infection manifests itself by pain, redness and lachrymation of the eye, associated with extreme ptosis of the upper lid. This latter, which is swollen and oedematous, reveals on palpation the presence of a small indurated nodule, the size of an almond.

Incision of the skin over this tumour brings into view a small mass of yellowish fatty tissue, which upon section opens up a small central cavity in which the larval cestode lies. The parasite found, in each of Dr. Casaux's cases, has been identified as *Sparganum mansoni* and an excellent description of this worm is given. The conclusions arrived at by the author are :—

1. That there exists at Tonkin a, hitherto, unrecognised affection—" Ocular sparganosis."

2. That this affection is characterised by :—

(*a*) The presence of *Sparganum mansoni* in the upper lid.

(*b*) The formation of fibrous nodules in the lid, which are produced by the activity of the parasite in that situation.

(*c*) Marked inflammatory reaction in the tissues of the surrounding parts. R. P. C.

MASTERS (W. E.). **A Case of Tapeworm accompanied by Haemoglobinuria.**—*Lancet.* 1915. Oct. 23. p. 922.

The author, writing from the Belgian Congo, describes the symptoms and treatment of a young Belgian who was the subject of a Cestode infection, but who, during convalescence, developed haemoglobinuria which terminated fatally.

In the opinion of the writer this latter complication was precipitated by the patient's indiscretion in taking a large dose of alcohol, at a friend's house, during a clandestine visit; and, it is suggested that " the alcohol, together with the unexcreted male fern, acting upon a weakened constitution, freed the latency to haemoglobinuria."

R. P. C.

FOSTER (Winthrop D.). **Two New Cases of Polyradiate Cestodes, with a Summary of the Cases already known.**—*Jl. of Parasitology.* 1915. Sept. Vol. 2. No. 1. pp. 7–19. With 4 text-figs.

In the two new cases of polyradiate cestodes, which Foster describes, one is a tetraradiate form of *Taenia saginata* and the other a triradiate form of *Taenia pisiformis.* In neither case was the head present.

A tabular list of all the cases of Polyradiate Cestodes, which have been recorded to date, is given, and of these twenty-four (of the forty-four cases in the list) adult specimens of *Taenia saginata* display this anomaly. Amongst these twenty four specimens is one pentaradiate form [ROSENBERGER, U.S.A., 1903] and one tetraradiate form [FOSTER, U.S.A., 1915]. The remaining twenty-two are triradiate throughout the entire length of the strobila. The author points out that "with but one exception [RUDOLPHI, 1810, in *Dipylidium caninum*] all triradiate cestodes, in which the head has been recovered, have been found to have six suckers instead of the usual four; the triradiate feature extending throughout the scolex." In the majority of adult cestodes displaying this anomaly the head has, however, not been recovered.

Feeding experiments, carried out on a rabbit, with two proglottides of the triradiate *Taenia pisiformis* "tend to show that perfectly normal cysticerci may result from abnormal adults."

R. P. C.

BARLOW (Nathan). **Hookworm Work at Cuyamel [Honduras].**—*New Orleans Med. & Surg. Jl.* 1915. Dec. Vol. 68. No. 6. pp. 370–375.

The hookworm is stated, by the author, to be responsible for more economic difficulties with regard to native labour than all other causes combined, and the following percentages give its relative incidence at Cuyamel :—

"Hookworm is present in natives				79·25%,	negroes	54%.
Trichocephalus	,,	,,	,,	49·00%,	,,	47%.
Ascaris	,,	,,	,,	44·50%,	,,	40%."

[The number of cases which were examined, in order to arrive at these percentages, is not given.]

The writer states that "every native, or negro, free from malaria or other diseases causing anaemia, who has a haemoglobin percentage of, or less than 60 per cent., has hookworm." He states that the only other common diseases which would produce this degree of anaemia at Cuyamel are malaria and protozoal dysentery, and that "tuberculosis, cancer, leukaemia, syphilis, etc., are comparatively rare in Honduras."

The article also contains "Directions for a practical Anti-hookworm campaign in connection with Tropical corporation work," which suggest that an acurate knowledge of the percentage incidence of the different intestinal parasites is essential. Determination of the other local, anaemia-producing diseases is also insisted upon as a preliminary measure.

The treatment advocated by the author, unless some contraindication exists, is as follows :—

"*On retiring* : Calomel and Santonin āā grs. v.
On rising : Magnesium sulphate oz. ½.
After action of saline : Thymol grs. lxxv.
(To be taken within half an hour).
One hour after Thymol : Magnesium sulphate, oz. ½."

R. P. C.

Bishop (William A.) & Brosius (O. T.). **Chenopodium in the Treatment of Uncinariasis.**—*Jl. Amer. Med. Assoc.* 1915. Nov. 6. Vol. 65. No. 19. pp. 1610–1613.

With a view to ascertaining the approximate value of chenopodium, as a vermifuge in the treatment of uncinariasis, the writers compared the results obtained from its use with those from cases treated with thymol, which is cited as "the standard anthelmintic" for this condition.

The cases used for the experiment were unselected and previously untreated cases of the disease, and the number of worms expelled in the first whole stool was taken as an indication of the comparative efficiency of the respective treatments. Sixty cases were treated with each drug and the number of worms were averaged and gave a yield of seventy-six in the case of thymol and ninety-nine in the case of chenopodium.

A further series of cases treated with chenopodium averaged a yield of 131 worms for ninety cases ; and in one instance 1,379 worms were obtained from a first whole stool.

The writers summarise their conclusions as follows :—

"1. The method of administration of chenopodium is simple, and is attended with less inconvenience and discomfort to the patient than with thymol. This would give the drug an important place in the field work in uncinariasis.

"2. Chenopodium can be given at shorter intervals than can thymol and a cure can thereby be more quickly established, which gives it a greater economic value.

"3. Chenopodium is nontoxic in therapeutic doses.

"4. Chenopodium is a more efficient vermifuge than thymol in the treatment of uncinariasis."

R. P. C.

Fort (A. G.). **Rural Sanitation and Hookworm Disease.**—*Amer. Jl. Public. Health.* 1915. Oct. Vol. 5. Old Series Vol. 11. No. 10. pp. 1038–1043.

Dr. Fort in the course of this paper discusses the relative values of betanaphthol, thymol and oil of chenopodium in the treatment of ankylostomiasis. In view of the fact that oil of chenopodium is nontoxic and as efficacious as the two former drugs, he is of opinion that a wider use of this drug is merited.

Economic reasons, such as the scarcity and higher prices of betanaphthol and thymol, lead him to the same conclusion.

He quotes Dr. GUTHRIE, of the Johns Hopkins Hospital, as advising the use of oil of chenopodium, in this disease, in the following fashion :—

First day : 5 p.m., Epsom salts, 1 oz. ; liquid diet begun.
Second day : 5 p.m., Epsom salts, 1 oz. ; liquid diet.
Third day : 6 a.m., Oil of chenopodium ♏ xvi, in capsule. A similar dose is repeated at 8 a.m. and 10 a.m. At 12 noon castor oil 1 oz. plus chloroform ♏ xlv is administered. No food is given until treatment is completed.

Dr. GUTHRIE comes to the following conclusions in regard to this mode of treatment :—

1. The treatment is well borne. No ill-effects were noted and no complaints of subjective discomfort were elicited.
2. The treatment was successful in both Necator and Ankylostome infections. "It sometimes had to be repeated, but it practically never failed to eliminate some worms or to reduce the number of eggs in the stool."
3. It succeeded in some cases in which thymol had been tried repeatedly and had failed.
4. "When given in parallel series, to patients as they came, the chenopodium seemed much more efficient than thymol."
5. "The drug is also very efficient for Ascaris, somewhat less so for whipworm, and often clears the stools of *Strongyloides intestinalis.*"

R. P. C.

STILES (Charles W.). i. **Recent Studies on School Children, with Special Reference to Hookworm Disease and Sanitation.**—*New York Med. Jl.* 1915. Oct. 30. Vol. 102. No. 18. Whole No. 1926. pp. 906–907.

ii. **Zooparasitic Intestinal Infections. An Analysis of Infections found among 1,287 School Children (776 White, 511 Negro) of the City of X.**—*U. S. Pub. Health Rep.* 1915. July 2. Vol. 30. No. 27. pp. 1991–2002.

In order to gauge the extent of the influence of sanitation in certain rural and urban districts in the south of the United States, where hookworm disease is frequent, the author undertook the examination of a large number of school children. The children came from homes of two sanitary types—(*a*) Sewered, and (*b*) Privy.

The conclusion he arrived at was that those children coming from homes furnished with privy accommodation were more subject to intestinal parasites—both protozoal and helminthic—than those from homes provided with sewer accommodation.

Whilst this fact was established as a result of the investigation, the author does not claim that it is mathematically exact, since allowance must be made for the spread of various parasitic diseases—chiefly protozoal—by means of flies and the infection of food during its preparation.

He considers that "a privy has a radius of influence in every direction of the compass," and that the inhabitants of sewered houses may, by the proximity of a privy, be in as great danger of infection as those of the house in which the privy exists. "Hookworm Disease," he states, "is entirely due to bad sanitation," and its prevalence is an index of the sanitation of the district in which it occurs. The author points

out that good sanitation is a sound investment economically, since the cost of education per head is more in the case of poor children coming from insanitary homes, than in the case of those children who live under hygienic conditions in sewered homes. In consequence, a greater expenditure of money on sanitation would be reflected in a material reduction of the cost of education, together with a general improvement in the physical and mental well-being of the population.

A table showing the prevalence of the different intestinal parasites in the various sanitary groups is given in the second of the above papers.

R. P. C.

STILES (C. W.). **Memory Tests of School Children. Memory Span of 1,585 White School Children (751 Boys, 834 Girls) in the City of X.**—*U.S. Public Health Rep.* 1915. Dec. 24. Vol. 30. No. 52. pp. 3738–3745.

The children taking part in the memory test, recorded by Professor Stiles in the above article, were drawn from the white community in one of the Southern cities of the United States. The ages of the children ranged from six to seventeen years and the memory test employed was that devised by Professor E. K. STRONG.

The children were divided into the following sanitary groups :—

(*a*). Those coming from homes with sewer connection, but without privies (1,223).

(*b*). Those from homes with privy sanitation (271).

(*c*). Those from homes of which the sanitation was unknown (91).

The tabulated results show that those children coming from homes in group *a* average a higher memory span than those coming from homes classed in group *b*.

Of the series, 31·7 per cent. of the scholars submitted specimens of faeces for microscopical examination, and the memory span of the children displaying helminthic infection is compared with that of the children not so infected.

Professor Stiles arrived at the following conclusion in regard to the infected cases :—

"Light infections with hookworms (*Necator*), eelworms (*Ascaris*), *Lamblia* or *Endamoeba coli* did not show any material effect in inhibiting the memory span of the children who were found to harbor these parasites, when their memory span was compared with the average of the children of their respective groups."

He states, however, that "this conclusion cannot be extended at present to cases of severer infection with these parasites."

R. P. C.

FAUNTLEROY (C. M.). **Examination of Arriving Aliens for Uncinariasis at Honolulu. The Laboratory Equipment and Duties of Assistants; Collection of Specimens for Examination; Preparation of Microscopic Specimens; Rules for the Guidance of Assistants; Identification of Specimens; Examination of Slide Preparations; Further Examination and Treatment of Aliens certified for Uncinariasis.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1915. May. Vol. 2. No. 11. pp. 703–714.

Under the Immigration Laws in force at Honolulu, uncinariasis is classed as a "dangerous contagious disease," and no alien so infected is permitted either to land or to reside in United States territory.

The U.S. Immigration authorities do, however, undertake the treatment of certain infected aliens, when their general condition is good and disease affecting vital organs is absent. This treatment is carried out at the Immigration Station, and the drug employed for the expulsion of the parasites is thymol. A well-developed adult, without marked anaemia, receives a full dose of 60–80 grains, and for children is prescribed a dose which is regulated according to age and physical condition. After the treatment the immigrants are kept under observation at the Immigrant Station for some days, and the faeces are again examined for hookworm ova. In the event of ova being found, the treatment is repeated, and at a period later the faeces are re-examined. It is not until a negative examination results that the alien is given permission to leave the station. The method of examining the faeces of the aliens upon their arrival at Honolulu, and the care exercised throughout in regard to the identification of specimens are detailed. This is ensured by means of "identification tags," which are attached to the vessel containing the specimen through all the stages of investigation. This paper should be referred to by those whose duties entail the examination of large numbers of patients for hookworm disease.

R. P. C.

ROMERO (Felix). **Atralgia de origen unsinariásico.** [Arthritis of Uncinarial Origin.]—*Repertorio de Med. y Cirug.* 1916. Feb. Vol. 7. No. 5. [No. 77.] pp. 199–201.

An account of two cases of arthritic trouble which appeared to be due to the presence of *Ankylostoma duodenale*, and which subsided promptly on treatment directed to the parasite.

Case 1. A woman, aged 45 years, had enjoyed good health until 14 years previously. She then began to suffer from debility, pallor, dysmenorrhoea, and articular pains in the knees. She had never had chilblains. Upon examination the knee-joints were apparently ankylosed, and all the joints of the limbs were painful on movement. There were, however, no obvious signs of inflammation, or nodosities. The bowels were obstinately constipated. The heart presented a faint basic murmur, and there was tenderness along the course of the colon. A dose of 40 grammes of sulphate of soda was at once given, which produced a large action containing several specimens of *Ankylostoma duodenale.* Upon this indication the patient was at once treated with thymol and arsenico-ferruginous tonics, with the result that all the joint-symptoms quickly disappeared.

Case 2. A merchant, 40 years of age, who was pale, grey-haired, and suffered from difficulty in walking. The appetite was bad, and the patient complained of vague pains in different parts of the abdomen, which increased when he did not take pills to relieve his excessive constipation. When the bowels were confined, pains supervened in the knees and other joints, and much itching was felt at the anus. Upon examination the articulations were found to be very painful, but presented no signs of enlargement or effusion. These symptoms had lasted, on and off, for 20 years. After anti-rheumatic treatment had been employed in vain the author, recollecting the former case, tried thymol, with the result of producing ankylostoma in the stools. The arthritic symptoms immediately improved, though the patient subsequently suffered from relapses due to his mode of life, which were treated on the same lines.

J. B. N.

FERRIS (E.) & HEYMANN (P.). **Un cas d'occlusion intestinale due à la lombricose.**—*Bull. Soc. Méd.-Chirurg. Indochine.* 1914. Oct. Vol. 5. No. 8. pp. 332–336.

The authors of this paper record the case of a young soldier who was admitted into hospital, in a comatose condition, suffering from intestinal obstruction. The condition of the patient was desperate, and a laparatomy was performed without anaesthesia. At the operation a mass of ascarids was found to be obstructing the lower portion of the ileum for seventy-five centimetres of its length.

The ileum was opened at a distance of thirty centimetres from the ileo-caecal valve, and the worms, to the number of 253, were removed.

The patient, however, died.

At the subsequent post-mortem examination a further mass of thirty-four ascarids was discovered in the ileum and a group of five in the caecum. In the discussion on this case, Dr. PELLETIER cited one, which he had recently had under his care, in which the cause of an obscure peritonitis was found to be an Ascaris which had perforated a typhoid ulcer of the ileum.

R. P. C.

AYUSO y O'HORIBE (Hircano). **Hipotermias nocturnas de origen helmintiasico. Caso clinico.** [Nocturnal Hypothermia of Helminthic Origin.]—*Revista Med. de Yucatan.* 1915. Oct. Vol. 10. No. 12. pp. 172–179.

Notes on the case of a child, aged 5 years, who was believed to be suffering from enteric fever. Throughout the case, nocturnal hypothermia was a marked feature, which persisted until santonin was given. This brought about the removal of large numbers of Ascarids and the child rapidly regained good health. The hypothermia disappeared with the other toxic features of the case upon removal of the worms.

R. P. C.

BARLOW (Nathan). **Clinical Notes on Infection with *Strongyloides intestinalis*, based upon a Series of Twenty-Three Cases.**—*Interstate Med. Jl.* 1915. Dec. Vol. 22. No. 12. pp. 1201–1208.

The twenty-three cases which form the subject matter of this paper were admitted to the Hospital at Cuyamel, Honduras, during a period of fifteen months. Of the series five were "pure" cases [i.e., were uncomplicated by any other infection or disease].

Four stages of the disease are described :—

1. *Stage of Invasion*: The perforation of the skin by the larvae, followed by redness and intense irritation.

2. *The Latent Stage*: "During which there is frequently a peculiar, irritable condition of the intestine, in which any laxative sufficient to act at all will produce a number of violent movements which leave the patient exhausted."

3. *The Stage of Diarrhoea*: The diarrhoea is of an intermittent character and is unaccompanied by pain or colic. "It is characterised by an inability to retain the stools for more than a few minutes." The stools are free from blood and mucus, unless the infection is complicated by the presence of haemorrhoids or dysentery. NORMAND considered Cochin China diarrhoea as being due to this parasite.

4. *The Stage of Neurasthenia*: The general characteristics of this stage are those of neurasthenia due to any cause. Emaciation, anorexia, vertigo, general weakness and other symptoms are also cited by the author as occurring in this stage.

Under the heading of "Special symptoms" the author mentions that arthritis, pneumonia, fistula in ano, haemorrhoids and peroneal paralysis have been recorded as being attributed to *Strongyloides intestinalis* infection.

Energetic treatment with large doses of thymol or male fern, or both in alternation, is recommended. R. P. C.

RODRÍGUEZ ARJONA (Vincente). **Enteritis cronica y Tricocefalo dispar.** [Chronic Enteritis and *Trichocephalus dispar.*]—*Revista Med. de Yucatan.* 1915. Aug.-Sept. Vol. 10. No. 10–11. pp. 147–152.

In this paper the author calls attention to a severe type of chronic enteritis which is not amenable to ordinary methods of treatment, and in which attention to suitable dietetic treatment produces no improvement in the condition of the affected patient.

The author notes that, upon examination of the faeces of these patients, the ova of *Trichocephalus dispar* were invariably found to be present, and he attributes the enteritis and the many complications which he calls attention to, to the presence of the adult parasites in the intestine.

The only treatment which has been found of value in this Trichocephalus enteritis is the administration of thymol. It is recommended that this drug be given in two to three gramme doses (one gramme to each cachet) in the case of an adult, and in half-gramme doses (suspended in syrup) in the case of children.

The presence of badly compensated heart lesions is held to contraindicate the use of thymol in this condition. R. P. C.

KLEINE (F. K.). **Die Uebertragung von Filarien durch Chrysops.** [The Transmission of Filaria by Chrysops.]—*Zeitschr. f. Hyg. u. Infektionskr.* 1915. Oct. 26. Vol. 80. No. 3. pp. 345–349.

This is an account of an investigation, carried out at Eseka in the Cameroons, regarding the transmission of Filaria by Chrysops. The inhabitants of the district in and around that in which the work was carried out are heavily infected with *Filaria loa*, and Chrysops and sand-flies abound.

Six hundred female flies were examined and, of these, five hundred were *C. dimidiata* and the remainder *C. silacea.* Of the whole number thirty-two were found to be infected—i.e. 5·3 per cent.—and in the case of nine of these infected flies the larvae were fully mature.

Development, according to the author's account, appears to take place in the fatty connective tissue surrounding the tracheae in the abdominal cavity, and it is to that site that the embryos converge when they first perforate the gut of their host. In the early stages the larvae remain motionless and it is not until their evolution has made marked advance that they commence to leave their position in the fatty connective tissue and to wander about the abdominal cavity. Later, they make their way to the cephalic end of the body;

and, in two cases, the author was able to demonstrate the emergence of the larvae from the proboscis. This was carried out by placing the head, after removal, in a few drops of salt solution and observing under a low power of the microscope.

The size of the mature larva is given as being the length of the diameter of the field, when Ocular 2 and Objective AA are used with the tube drawn out to 160 mm.

[The Chrysops used in this work were, apparently, collected in a haphazard fashion, and the hosts upon which they had fed were, consequently, unknown. The nature of the larvae, therefore, would appear to be undetermined. Neither illustrations nor a description of the larva are given, and no attempt was made to communicate filarial infection by means of infected flies. The work must be regarded as incomplete.]

R. P. C.

NISBET (W. B.). **Note on the Infectivity of Filaria.**—*Med. Jl. of Australia.* 1915. May 15. Vol. 1. 2nd Year. No. 20. p. 449.

In this communication the author draws attention to what he suggests might be called "domestic infection" in filariasis. He considers that "the proportionate incidence of the disease, from 3 per cent. to 11 per cent., among the observed towns on the East Coast of Queensland, renders the chance of infection of two or more people living in the same house possible from different sources, and not directly from one to the other through an intermediate mosquito." In support of this contention he cites the following cases :—

1. Mr. B., who suffered from filariasis, died "from causes not connected with the parasitic disease," in 1907. His daughter, Miss B., aged 11, suffered from a transient lymphangitis in 1914, and an examination of the blood revealed the presence of microfilariae.

2. Mrs. C. was, in 1913, operated upon for an inflammatory swelling at the margin of the left breast. The wound subsequently discharged chylous fluid, and examination of the blood proved the presence of filarial embryos. Her husband, Mr. C., was recognised as an early case of elephantiasis in February 1915, and his nocturnal blood showed microfilariae in large numbers.

With regard to Case 1, the author considers that "there is no evident objection to the theory that Miss B's infection was obtained from the father, and had continued unobserved for eight or nine years."

In Case 2 it is suggested that "owing to the close domestic association it is reasonable to suppose that the one had infected the other." The author, however, admits that "the house was largely infested with mosquitoes."

R. P. C.

ANDRUZZI (A.). **Un caso di elefantiasi dello scroto e del pene, guarito con la fibrolisina.** [A Case of Elephantiasis of the Scrotum and Penis, cured with Fibrolysin.]—*Ann. Med. Nav. e Colon.* 1915. June. Anno 21. Vol. 1. No. 6. pp. 656–657.

The case of a sailor taken, apparently in the Far East, with an acute lymphangitis of the scrotum and penis which was diagnosed as being due to filariasis, though no filariae could be discovered in the blood. Daily injections of 2 cc. of fibrolysin solution, injected into the

gluteal muscles, as recommended by CASTELLANI, were given, to the number of 100 in all, with complete success. At the end of four months the patient was considered cured. The simultaneous local treatment of the parts by massage and elevation, recommended by CASTELLANI in the case of the limbs, was omitted.

J. B. N.

NICOLL (William). **On Worm Nodules in Calves: Some Negative Observations and Experiments.**—*Med. Jl. of Australia.* 1915. Dec. 4. Vol. 2. 2nd Year. No. 23. pp. 529–531.

Acting upon the suggestion of Dr. BREINL, the author of this paper undertook a series of experiments with a view to testing the hypothesis that "the larvae (of *Onchocerca gibsoni*) may occur in the blood, only during the early stages of infection, in young animals." Ten calves, varying in age from five to eleven months, were used for the experiments; and these were, without exception, bred and reared on the Townsville Common. Upon this common seven or eight hundred head of cattle are usually grazing, and a large proportion of these are infected with nodules.

The experiments were carried out from January to July in 1915, during an abnormally dry period, and the author suggests that the abnormal conditions which obtained may have had some effect upon the results at which he arrived.

The technique of the experiments was as follows:—

The calf was brought in from the common early in the week and examined for worm nodules. These examinations were all negative. The skin of the neck was then shaved, and a cannula was inserted into the jugular vein and about 300 cc. of blood was withdrawn. This was received into an equal amount of a 3 per cent. solution of sodium citrate. The citrated blood was haemolysed by the addition of distilled water, and then rapidly filtered through medium grade filter paper, the process taking from 45–60 minutes. The filter papers were then inverted and thoroughly washed in distilled water, after which they were examined microscopically. The washings from the filter papers were centrifuged, and from the deposit so obtained films were made. These were examined both stained and unstained. In every case the result was negative, although in each case 25–40 films were examined. No larvae were found in any of the films.

On the day following "the bleeding," the calf was killed. The skin was removed with care and films were made from the various parts of the subcutaneous tissues. Films were also made from the superficial blood vessels. Thorough examination for the presence of nodules, both superficially and in the deeper tissues, was not rewarded with a "find." The search for unencapsuled worms, adult or larvae, proved equally fruitless.

The joints, the tissues around, the bursal fluid, and pieces of subcutaneous and muscular tissues were all thoroughly examined, but the result in each case was a negative one.

A special study of the lymphatic glands was made and proved equally unproductive.

The author gives a summary of all the chief positive observations which have, so far, been recorded in regard to the life-history and development of worm nodules in cattle.

R. P. C.

LECOMTE (A.). **Les Kystes à Filaires** (*Onchocerca volvulus*) **au Soudan Français.**—*Bull. Soc. Path. Exot.* 1915. Nov. Vol. 8. No. 9. pp. 655–656.

Lecomte considers that the area given for the geographical distribution of *Onchocerca volvulus* should be extended to include the French Soudan. In support of this opinion he records here two cases of *Filaria volvulus* infection, which he had under observation at the Native Hospital at Dakar. Both cases came from the Upper Senegal and Niger Territory, and until 1914, when they had been sent down to Dakar, had never left that district.

The cysts, in these cases, were located in regions which are poorly supplied with lymphatics, and were slightly painful. One was extirpated from a position below and external to the left anterior-superior iliac spine; the other from the right sub-spinous fossa. In the latter case the cyst was adherent to the aponeurosis of the subspinatus muscle. In one of the cases a small tumour, which had the appearance of a calcified cyst, was noted in the ninth intercostal space on the right side. Neither case showed any other symptom of filariasis, but in each inguino-crural polyadenitis was present.

R. P. C.

ROSENBERGER (Randle C.). **Filariasis associated with Schistosomiasis.**—*New York Med. Jl.* 1915. Oct. 30. Vol. 102. No. 18. Whole No. 1926. pp. 883–884.

The patient, a male aged thirty-one years, in whom the association of these two parasites was noticed, was born in Egypt and, according to the history of the case, had acquired both infections whilst resident there. Hematuria was first observed by the patient at the age of seven or eight, and he was then diagnosed to be suffering from bilharziasis. The passage of blood in the urine continued until he was twenty-one years of age, when it ceased spontaneously.

Chyluria appeared when aged twelve, and this continued for five weeks. No other symptoms of filariasis have at any time been noticed. When seen in July 1915 he had been absent from Egypt for thirteen years. He then complained that both symptoms had recurred and had been present for the past ten weeks.

Microscopical examination of the urine confirmed the presence of terminal-spined ova, and of microfilariae which possessed the morphological characteristics of the embryos of *F. bancrofti.*

Filarial embryos were also found in the peripheral blood, but no strict periodicity was noted.

A differential leucocyte count showed the presence of eosinophilia to the extent of 15 per cent. Presuming that salvarsan might be of service, an injection of this drug was given. The patient reported, two weeks later, that he felt a great deal better and that the urine was "entirely normal" again. Professor Rosenberger was, however, unable to obtain another specimen of urine, and could not confirm either the presence or absence of the ova and microfilariae after the treatment.

R. P. C.

LEIPER (R. T.). **Notes of the Occurrence of Parasites presumably Rare in Man.**—*Jl. R. Army Med. Corps.* 1915. June. Vol. 24. No. 6. pp. 569–575. With 8 figs.

The author states that the parasitic worms are generally so large and obvious that it would seem unlikely that forms other than unnatural infections could have remained practically unrecognised, but from material that had reached him during the last two or three years this is evidently the case.

Physaloptera mordens Leiper.—This parasite was first described from Uganda. Further examples have been obtained from negroes in the Transvaal and others from Portuguese East Africa.

"These worms live in the stomach, often in association with *Ascaris lumbricoides*, which they closely resemble. They are readily recognised with a hand lens, for they possess a cuff-like cuticular expansion at the anterior end which almost invariably obscures the lips. When these are visible only two are found, a feature which at once distinguishes the genus *Physaloptera* from the genus *Ascaris*. Moreover, the skin over the whole body is smooth, while in Ascaris it is characteristically transversely striated. . . . The eggs have a shell of thick clear cuticle with a smooth surface. The life-history is unknown, but presumably similar to that of the Ascaridae."

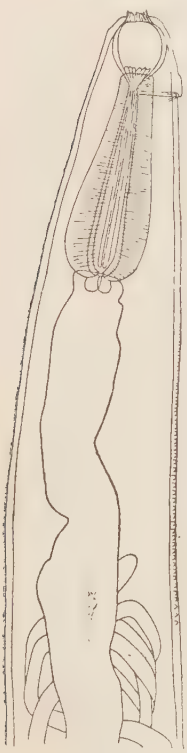


Fig. 1.

Fig. 2.

Fig. 3.

Triodontophorus deminutus.

Fig. 1. Anterior end.
Fig. 2. Posterior end of male, lateral view.
Fig. 3. Posterior end of male, dorsal view.

Triodontophorus deminutus Railliet and Henry.—The author published an account of this species from a case in Nyasaland in 1908. Later, further cases were recorded from Nyasaland and from Portuguese East Africa.

"The parasites are apt to be mistaken for ankylostomes. They often occur in the same cases, and their eggs also are very similar. Triodontophorus has, however, a different habitat from the Ankylostoma. The former lives attached to the wall of the great intestine, the latter occurs only in the small intestine. Structurally the two parasites differ very considerably. The oral capsule in both has a chitinous wall, but in Triodontophorus the orifice is quite terminal, and is guarded by a ring of stout bristles. In Ankylostoma the mouth capsule is always bent dorsally, and the mouth capsule is guarded by bilaterally placed paired teeth."

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 4. Dorsal ray of *A. caninum*.
Fig. 5. Dorsal ray of *A. ceylanicum* ?, from Sierra Leone.
Fig. 6. Dorsal ray of *A. ceylanicum*, from India.

Ancylostoma ceylanicum Looss.—This worm was detected as a common parasite of cats and dogs and an occasional parasite of man by Major Clayton LANE [this *Bulletin*, Vol. 2, p. 188]. In 1914 the author was unable to find this species in dogs in Shanghai and Hankow. Recently Dr. KERR has informed him that he has found what appeared to be *A. ceylanicum* in 10 to 12 per cent. of the cases examined by him in the prison at Chiengmai, Siam, usually with one or two worms in each case. Col. Leiper writes that worms from two of these cases were received and are undoubtedly examples of this species. The author refers to a paper by YORKE and BLACKLOCK on Ankylostomiasis in dogs in Sierra Leone. These authors say that they found *A. ceylanicum* and point out the importance of ascertaining whether it occurs in man there. The details given lead Leiper to doubt the accuracy of the diagnosis. He gives figures in support of this view and is inclined to think that YORKE and BLACKLOCK were dealing with *Uncinaria stenocephala* Railliet, a similar ankylostome often found in association with *A. caninum*.

Euparyphium malayanum Leiper.—This species was described in 1912 from material obtained in the Malay States, and later more fully by Professor ODHNER. Dr. KERR has now sent a single specimen from a case in Chiengmai. Major Clayton LANE has lately described a specimen from Assam under the name of "*Artyfechinostomum sufrartyfex*." Leiper writes that though the new species is placed in a different genus and subfamily of the Echinostomidae the great similarity in the descriptions and figures leaves room for doubt whether the species reported on by LANE is not the same as that previously described by ODHNER and himself [see this *Bulletin*, Vol. 6, p. 300].

Opisthorchis viverrini Poirier 1886.– In Dr. KERR's consignment of parasites obtained from prisoners at Chiengmai was a tube containing three flukes. It was stated that the ova were found in about 15 per cent. of faeces examined and the worms twice obtained post mortem. They were recorded as *Opisthorchis felineus*. Leiper says that they differ in that "the skin is covered with minute acicular spinelets;

the ovary is multilobulate; the branches of the gut proceed almost to the extreme posterior end of the body. The ovary and testes fill the last fourth of the body between the gut branches." These points are shown in a figure. Leiper makes the provisional diagnosis of *Opisthorchis viverrini*, a parasite found in the Indian civet cat, but not hitherto recorded in man. Infection is acquired by the consumption of uncooked or partially cooked fresh-water fish. A. G. B.

KERR (W. F. J.). **Intestinal Parasites in Northern Siam.**—*Trans. Soc. Trop. Med. & Hyg.* 1916. Jan. Vol. 9. No. 3. pp. 82–89.

In order to determine "the relative frequency of infection with various intestinal parasites among the prisoners in the Chiengmai jail," the author undertook an investigation which involved the examination and treatment of 230 male adult prisoners. The routine followed, in every case, was to make a microscopical examination of the faeces, and later to administer an anthelmintic. The following table gives the main results, as far as the helminths are concerned, in percentages :—

Parasite.	Primary exam. positive.	Parasites found after anthelmintic.	Parasites found after anthelmintic when primary exam. negative.	Total Infected.
Taenia saginata	30·0	56·1	28·3	58·3
Opisthorchis felineus ..	17·0	0·0	0·0	17·0
Strongyloides stercoralis ..	18·3	0·0	0·0	18·3
Ascaris lumbricoides ..	46·5	25·7	11·7	58·2
Oxyuris vermicularis ..	1·3	50·0	48·7	50·0
Ankylostoma sp.	(?)	14·8	(?)	14·8
Necator americanus ..	56·5	88·7	37·8	94·3
Trichocephalus trichiurus	27·0	1·7	1·3	28·3

Multiple infections were usually met with and, in one case of the series, seven species were noted. In one single instance no parasites were found. No attempt was made, at the preliminary examination, to distinguish the ova of *Ankylostoma* from those of *Necator*, all hook-worm ova being put down as Necator. Of the ankylostome worms which were recovered the majority have proved to be *A. ceylanicum*, although *A. duodenale* was met with and recognised.

The author is of opinion "that *N. americanus* is the common hook-worm throughout Northern Siam, and is indigenous to the country, as it is to the neighbouring territories."

"The anthelmintics used were eucalyptus mixture and beta-naphthol, either alone or combined with santonin. Without the santonin neither were of much effect in expelling round worms." It was noted in the case of taeniasis that when beta-naphthol was given, the proglottides were expelled singly or in short chains, and that the head was rarely found. After eucalyptus mixture the proglottides came away in long chains and heads were frequently recovered. R. P. C.

MOILLET (A. K.) & CARRENO (F.). **Intestinal Parasites of the Isthmus of Tehuantepec [Mexico].**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1916. Jan. Vol. 3. No. 7. pp. 411–415.

During the past six months the authors of the above report have been examining the faeces of " practically all the patients " who have been admitted to the hospitals under their charge, and have arrived at the conclusion that 20 per cent. of the population of the town of Minatitlán are suffering from the effects of Necator infection.

They describe the town of Minatitlán as being extremely unhygienic and insanitary—partly built on a swamp and wholly devoid of any arrangement for the disposal of sewage—the majority of the population as going about barefoot and being ignorant of the rudiments of the laws of health, and the death-rate as high, even for that part of the Tropics.

The results obtained from the 550 cases examined may be summarised as follows :—

Hookworm was found to be present in 431 cases.

Tricocephalus was nearly always associated with hookworm.

Ascaris was present in one-third of the hookworm cases.

Strongyloides (usually associated with hookworm) was found on 28 occasions.

Oxyuris was noted in only 12 cases of the series.

Taenia is recorded as being a rare parasite, in spite of the frequency of " measley " pork.

The authors conclude, as a result of their experience in the treatment of hookworm cases, that :—

1. " The most common subjective symptom is epigastric pain coming on at uncertain intervals." This was noted in 320 cases.

2. Surgical cases should be examined for this infection previous to operation, " since the disease is the commonest cause of the non-healing of wounds."

3. " Afternoon and evening fevers without chills are more often due to hookworm than to malaria, in this place (60 cases)."

4. " Hookworm is certainly more common amongst the barefooted population " than in the case of the shod, in the proportion of four to one.

Regarding therapeutic agents the authors found male fern to be inefficient in the treatment of this disease, and thymol " too dangerous, owing to the facilities for obtaining alcoholic drinks." They found that the chloroform, castor oil and eucalyptus mixture gave good results in all but very obstinate cases. They finally had recourse to a mixture containing oil of eucalyptus, oil of chenopodium, chloroform and castor oil, but the results obtained from this mode of treatment are not recorded.

R. P. C.

COCHRAN (Samuel). **Concentration of Helminth Ova from Faeces.**—*China Med. Jl.* 1915. Nov. Vol. 29. No. 6. pp. 398–399.

This note describes a method of concentrating helminth ova from faeces, which has the advantage of being a rapid one. The technique is as follows :—

A portion of the faeces the size of a walnut, or smaller, is mixed with 30–50 cc. of water and strained through a sieve, 90 meshes to the inch.

The faeces and water are then centrifuged in successive portions, the supernatant fluid being poured off each time and more of the mixture added until all has been centrifuged. This will take three to five centrifugings. To the deposit obtained by this process a calcium chloride solution (42·5 gm. to 100 cc. water) is added, and the contents of the tube are well mixed and again centrifuged. This time the ova float on the top of the fluid and can be pipeted off in the top layer of about 1 cc. The fluid pipetted off is removed to another tube which is filled with water and given a final centrifuging, which throws the ova to the bottom of the tube. The deposit is then withdrawn by means of a fine pipette and transferred to a slide for examination.

Dr. Cochran states that 15–30 turns of the handle of an ordinary hand centrifuge is sufficient for each centrifuging, and that the whole process can be completed in less than ten minutes. This method has been used for several months at the Hope Hospital, Hwaiyuan, and has given most satisfactory results.

R. P. C.

SINTON (J. A.) & BAILY (J. D.). **Eosinophilia in Some Cases of Helminthiasis.**—*Indian Med. Gaz.* 1916. Feb. Vol. 51. No. 2. pp. 58–60.

The authors record in this paper the results of a series of differential leucocyte counts, made "on 101 cases, in whose stools the ova of worms had been found." In each case 500 white cells were counted, and the degree of eosinophilia in the pure infections (those in which only one variety of parasite was found) may be summarised thus :—

Parasite.	*Cases examined.*	*Min. Eosin. count.*	*Max. Eosin. count.*	*Avge. Eosin. count.*
1. *F. medinensis* ..	7	7·2%	20·0%	14·6%
2. *A. duodenale* ..	17	6·0%	30·2%	17·7%
3. *A. lumbricoides* ..	37	1·2%	21·6%	7·3%
4. *T. trichiura* ..	13	6·0%	23·2%	14·2%
5. *O. vermicularis* ..	1	—	7·4%	—

In the counts made from those cases which had mixed infections, the highest degree of eosinophilia was noted when *A. duodenale* and *T. trichiura* were associated (34·4 per cent.).

[The seven cases of *F. medinensis* are placed in the list of "pure" infections, since the authors do not mention that they were associated, with other helminths, in the same host. It is obvious, however, that if they are correctly placed in the 101 cases in whose stools ova were found they are mixed infections, and should be removed from the list of "pure" parasites.]

R. P. C.

SHIRCORE (T. O.). **A Note on Some Helminthic Diseases with Special Reference to the Housefly as a Natural Carrier of the Ova.**—*Parasitology.* 1916. Jan. Vol. 8. No. 3. pp. 239–243.

In this note Dr. Shircore calls attention to the results of an enquiry which he has been conducting at Mombasa, with a view to testing

suspicions he had of the housefly, as a natural carrier of helminthic ova. The investigation was carried out in consequence of the fact that patients, admitted to the Native Hospital, " contracted, after varying intervals, bowel troubles, which were found to be due to intestinal parasites." In the hospital, at this time, were porters attached to the Expeditionary Force, Indian Troops and " African cases " and flies were attracted especially to Native Hospital Ward No 3 in which the sick porters and " African cases " were located.

Flies were consequently caught, killed, and after washing in ether and water, were " well mashed up." The larger fragments were carried up to the top of the fluid by the ether, and the underlying fluid was pipetted off and centrifuged. The deposit obtained in the centrifuge tubes was examined for ova. The results which he obtained from the examination of 275 flies, obtained from four areas, are as follows : –

Place.	Number of flies caught.	Number of flies infected.	*Asc. lumb.*	*Tricho. disp.*	*Ank. duod.*	*Taenia sag.*	*Schist. man.*	Remarks.
Native Hospital, Ward 3 ..	100	10	—	6	1	4	—	One fly was doubly infected.
Police Lines ..	100	11	—	5	2	4	1	One fly was doubly infected.
Native Hospital	50	6	1	4	1	—	—	—
Meat Market ..	25	2	—	1	1	—	—	—

The author considers that the small number of *Ascaris lumbricoides* ova found in the flies is doubtless due to their large size, " this being in agreement with the observations of GRAHAM-SMITH."

Dr. Shircore suggests that, in districts where it is difficult to obtain faecal material for examination, this method of examining the flies for ova would assist in determining the " prevalence of helminthiasis." " The incidence of Helminthiasis at Mombasa " is given in the subjoined list. One hundred cases at the hospital were examined, and eighty-three gave positive results. It is on these eighty-three cases that the results are based :—

Ankylostoma duodenale	46%.
Ascaris lumbricoides	44%.
Trichocephalus dispar	43%.
Taenia saginata	29%.
Schistosomum mansoni	5%.
Oxyuris vermicularis	2%.
Strongyloides stercoralis	3%.

[That the housefly may ingest helminthic ova is, of course, a well-established fact, but it is difficult to understand the part played by the housefly in the transmission of such parasites as *Taenia saginata* and *Schistosomum mansoni*—which need definite intermediate hosts -and *Ankylostomum duodenale*—which requires a suitable external medium. Regarding *Ascaris lumbricoides*, the size of the ovum appears to present difficulties which must make its transmission by the housefly extremely rare. Unless it can be demonstrated that the passage of the ova of *Trichocephalus dispar* through the intestinal canal of the housefly accelerates the formation of the embryo, the transmission of this helminth in this way must be regarded as far from common.]

R. P. C.

BERIBERI AND DEFICIENCY DISEASES.

WILLCOX (William Henry). **Beri-beri, with Special Reference to Prophylaxis and Treatment.**– *Lancet.* 1916. Mar. 11. pp. 553–557.

In this very interesting paper the author establishes the fact that beriberi is present among the forces employed in the Eastern Mediterranean and Persia. It is well known that scurvy dogs the armies employed in a long war, but it is rare for beriberi to be recognised among European troops. Over 50 cases are recorded, 26 from the British troops in the Dardanelles and 11 from Mesopotamia. Out of the 26 Dardanelles cases 21 had suffered from some toxic factor previously, associated with jaundice, paratyphoid, purpura or diarrhoea ; in the Mesopotamia cases this was less evident. Clinically the cases could all be classed as belonging to the wet variety and there were three deaths in the Dardanelles series. The post-mortem records are specially interesting as showing marked evidence of congestion of the mucous membranes of the stomach and whole gut, but especially of the duodenum. A deficiency in the vitamine content in the food was recognised as the chief etiological factor. A concise account of modern knowledge on the subject is given. Accepting the want of the necessary vitamines in the food provided as a cause, every endeavour was made to supply these at once in the treatment.

Very excellent details are described how yeast can be supplied in palatable forms for both acute and chronic cases and a list of other articles of food in relation to their vitamine value is given. Attention is drawn to the fact that the curative agents for scurvy are not the same as for beriberi and that the anti-scurvy vitamine is destroyed at a lower temperature than the anti-beriberi vitamine, the latter being removed at 130° C. but not at 100° C.

A dietary for preventing beriberi in campaigns should contain haricot beans, pea flour, porridge and, if beriberi is present, some preparation of yeast. It is very important that cases should be detected as early as possible and the author emphasises the usefulness of the "squatting test." In this a beriberi patient is unable to raise himself or, if he does so, it is by climbing up his knees with his hands, like a patient suffering from pseudo-hypertrophic paralysis.

P. W. Bassett-Smith.

WALCOTT (Allen M.). **Beriberi in the Amazon Basin.**—*Jl. Amer. Med. Assoc.* 1915. Dec. 18. Vol. 65. No. 25. pp. 2145–2147.

In this very interesting paper the author shows that true beriberi is common in the Amazon Valley and that it can be effectively got rid of by proper dietetic methods. In 1912 LOVELACE [this *Bulletin*, Vol. 1, p. 484] stated that the disease affecting the Madeira-Mamore Railway Company's servants was neither true beriberi, nor due to a deficient diet. This view is still held by many locally. In the four years previous to 1912 there were in the Candelaria Hospital of the Railway Company 963 cases diagnosed as beriberi, cases always being present in the wards. When the author took charge of the hospital he found that the diet of both the first and second class patients consisted very

largely of tinned foods, polished rice and white flour. He immediately abolished the greater part of the tinned foods, giving in their place fresh fruits, beans, meat, fish, and milk. By the changes in the diet beriberi has been practically eradicated from the medical department of the Railway without any change in the other conditions. It is also less prevalent outside, as the knowledge of the method of prevention was spread. He quotes one rubber plantation, in which 40 per cent. of the labourers in 1913 suffered from beriberi; the owner hearing of the improvement made by the author at Candelaria consulted him and carried out his instructions, which resulted in the disappearance of beriberi from his plantation. The treatment of beriberi at Candelaria consist in giving :—

(1) Soups of beans and peas, fresh vegetables, fish and eggs.
(2) Meat, all varieties served underdone.
(3) Eggs, usually six daily. Fresh cows' milk several times daily.
(4) Fresh potatoes, beans, peas, and other fresh vegetables and fruits.
(5) Rice bran twice a day.
(6) Strychnin 1/30 gr. every six hours.

He states that by the change many thousands of dollars yearly are saved in avoidance of invaliding and in increased security of life, causing the employees to remain longer at the contract stations at a more reasonable wage, with a decrease in death-rate and an increased daily working power. Among the natives who consume manioc largely, beriberi is common and some experiments carried out on fowls showed that an exclusive diet of this flour will produce in birds similar symptoms to those seen in the polyneuritis brought on by a diet of polished rice.

P. W. B-S.

WILLIAMS (Robert R.) & JOHNSTON (John A.). **Miscellaneous Notes and Comments on Beriberi.**—*Philippine Jl. Sci.* Sec. B. Trop. Med. 1915. Sept. Vol. 10. No. 5. pp. 337–343.

It is generally believed that cases of beriberi are most frequent, other things being equal, amongst those upon whose metabolic processes there is the greatest demand, as in pregnancy in woman, firemen in ships, and others employed on hard labour. Experiments were carried out with 24 fowls on various diets and exercises, and showed that high temperature and work hasten the onset of polyneuritis.

The authors do not believe in the deficiency of vitamines per se as the cause of beriberi, but rather that "in beriberi there exists a toxic substance which produces the symptoms of the disease." When the toxic substance is in great quantity or is produced very rapidly, the results are like those of anaphylactic shock, resulting in acute beriberi; if produced slowly, we get chronic beriberi with progressive nerve lesions. This toxic substance may be derived possibly from an organism, but more probably is a product of disturbed metabolism, for which vitamines act as antidotes rather than foods. The demonstration of this toxic substance in fowls has not, however, been successful though the results encourage the authors to try further experiments.

P. W. B-S.

DRAPER (A. P.). **Beriberi early Diagnosed and readily Curtailed.**—*Jl. Trop. Med. & Hyg.* 1916. Apr. 15. Vol. 19. No. 8. p. 92.

Reference is made to a small outbreak of beriberi, which occurred on board a Norwegian bark that put into St. Helena having been five months out from Lamu near Zanzibar. Nine out of a ship's company of fourteen showed symptoms of beriberi. Three were severe enough to require hospital treatment, the captain being one. They all improved very rapidly and were able to rejoin the ship in a week, but as they sailed three days after there is no information as to whether the cures were permanent or not. No definite information is given with regard to dietary or hygiene of the ship except it is stated that rice was sparingly used and that the forecastle was overcrowded and dirty.

P. W. B-S.

MCWALTER (J. C.). **Relapsing Beriberi.**—*Brit. Med. Jl.* (Memoranda). 1916. Feb. 5. p. 201.

This is a record of a soldier patient aged 28, who contracted beriberi in India (exact locality not stated) while receiving the regulation army diet. The disease was of the mixed type and was associated with some cardiac dilatation. It is stated that he was liable to relapses of the condition whenever he became debilitated from any cause. In the remissions all the symptoms cleared up except the cardiac dilatation.

P. W. B-S.

ROMMEL (G. W.) & VEDDER (E. B,). **Beriberi and Cottonseed Poisoning in Pigs. (Preliminary Note.)**—*Jl. Agric. Res.* 1915. Dec. 13. Vol. 5. No. 11. pp. 489–493.

Meal made from cotton seed in America is used largely as a food for pigs, but only a part of this cotton seed meal is utilised owing to the sickness and mortality it produces if given too freely. Cattle fed on this substance may become lame and their eyes will suffer, but with pigs the ill effects are most evident. Two forms of disease are found in these, acute and chronic. In the former the attack is sudden, the animal has intense pain with shortness of breath, and death may follow very rapidly; dropsical conditions are frequently present. In the chronic form diarrhoea, emaciation and paralysis are present but the animal may live for a year or more. After death, congestions, effusions, and enlargement of the heart are found. These conditions are very similar to those known to follow the faulty metabolism from a diet deficient in vitamines, and recognised chiefly in man under the term of beriberi, a disease which has been reported by BRADDON to have been produced in a pig by feeding on polished rice. The authors carried out feeding experiments on twelve pigs, from which they draw the following conclusions:—(1) Pigs are susceptible to beriberi when fed on a vitamine deficient food such as rice, and it develops more rapidly in these than in man. In man it rarely appears before 90 days; in pigs pronounced symptoms may occur in 8–10 days. (2) It is believed that the so-called cotton seed poisoning of pigs is a deficiency disease analogous to, if not identical with beriberi in

man, the acute form corresponding to wet beriberi, the chronic to dry beriberi. (3) The cause of the cotton seed poisoning is probably a deficiency in the ration, causing among other manifestations changes in the nervous system.

Further experiments are being carried out to see if methods similar to those used for the prevention of beriberi in man can be practically applied to prevent cotton seed poisoning in pigs.

P. W. B-S.

EDWARDS (C. R.). **Peripheral Neuritis in Jamaica.**—*Jl. of Trop. Med. & Hyg.* 1916. Mar. 1. Vol. 19. No. 5. pp. 53–54.

A chronic disease is prevalent in Jamaica affecting mostly the young adults of the poorer classes, particularly in the town districts. This has been variously described during the past forty years by Health Medical Officers as beriberi, a form of beriberi, or the results of malarial fever. The disease terminates fatally in some cases in about 12 years; treatment of the cases at their own homes is very unsuccessful, the patients finally becoming a burden on the State. Ataxic symptoms are marked and the absence of oedema and dyspnoea differentiates this disease from ordinary beriberi. Post-mortems of three cases showed marked emaciation with wasting of the muscles, but no definite changes in the internal organs. In the nervous system degenerated cells were found to the posterior and, to a less extent, in the lateral columns of the cord and in isolated patches in the cerebellum and at the roots of the auditary and optic nerves.

Improved dietary generally caused a decrease in the symptoms except in advanced conditions when the paralysis was complete, but relapses generally occurred when the patients returned to their homes. Though no definite opinion can be formed of the etiology of this disease the author believes that it has nothing to do with syphilis, tubercle, or malaria, that it originates in the nerve centres and nerve roots, and may probably prove to be a "food disease."

P. W. B-S.

WEILL (E.) & MOURIQUAND (G.). **Recherches sur les maladies alimentaires par "carence."**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1914. Aug. 6. 3 ser. Vol. 30. No. 28. pp. 276–284.

Since 1914 the authors, the former of whom is Professor for Diseases of Children at Lyons, have been carrying out research work on "deficiency diseases" or what they term "maladies par carence"—Barlow's disease, beriberi, polyneuritis avium, all depending upon a deficiency in food a portion of which is usually thrown away, this portion containing a minute quantity of a curative substance. The evidence of the presence of this in the covering of the grain is repeated and its vitamine character emphasised, but this is only bringing forward proof on proof of the accepted theory. In their experiments they quote an interesting series of pigeons fed upon pearl barley, which is much used for infants. These birds in three or four weeks developed motor troubles similar to those brought about by an exclusive diet of polished rice. They quote also a a second series of pigeons fed upon coarse wheat flour; these birds showed no signs of any trouble by "carence" even after six weeks.

A microscopical examination showed that the flour employed was rich in cuticular fragments, which supplied the necessary substances. They state that there is clear proof that certain disease conditions of adults and infants are due to deficiency diets; that not only should the exclusive use of decorticated serials be avoided but other legumes should have their coverings intact as far as possible, and that when the flour of cereals or beans must be used, the nutritive value must be assisted by fresh vegetables, fruits and meat. The water in which rice, barley or wheat is boiled also contains much of the essential elements and should be utilised.

P. W. B-S.

WEILL (E.) & MOURIQUAND (G.). **Recherches sur la carence alimentaire à propos de la question du pain "de guerre."**—*Bull. et Mém. Soc. Méd. des Hôpit. de Paris.* 1915. Dec. 16. 3 ser. Vol. 31. Nos. 37–38. pp. 1145–1155.

The nutritive value of the various kinds of bread is at the present time of very great importance and the authors have followed up their previous papers on the diseases caused by a faulty dietary by a study on the different breads used under war conditions. It is well known that brown bread, which contains 74 per cent. of the grain as against 69–70 per cent. in white, is owing to its chemical composition the most nourishing, being richer in albumen, salts, etc., but the physiological experiments are still more conclusive, the decorticated grain, if given without a sufficiency of other foods, producing beriberi.

The same results follow whether the flour is obtained from wheat, rice, barley, or maize, and are always due to the removal of the outer coverings of the grain which contain a ferment, or the vitamine of FUNK. This ferment may be destroyed by heat in sterilisation even when the grain is not completely decorticated. The most nutritive bread would be that made from the whole grain, but the indigestibility of this would produce intestinal troubles rendering it generally unsuitable. Though perfect for a bird it is not so for man. Brown bread is easily digested and is both chemically and physiologically preferable for armies and large communities under the present conditions. The nutritive properties of bran, containing albumen, phosphates, and vitamines, might be more used in water or in the form of extracts in the bread.

The addition of flour from rice or other decorticated cereals, as recommended by MAUREL, is justified by appearance and caloric values but is not physiologically sound, the "ferment substance" which is indispensible for nutrition being deficient in all.

P. W. B-S.

WEILL (E.) & MOURIQUAND (G.). **L'Alimentation exclusive et la carence alimentaire.**—*C. R. Soc. Biol.* 1916. Jan. 22. Vol. 79. No. 2. pp. 37–39.

The authors point out that a varied diet will not always prevent the development of deficiency diseases, for a mixed diet of many cereals, deprived of their vitamine constituents, is as dangerous as, or even more so than, an exclusive diet of one of them. They also specially point out that sterilisation of otherwise safe foods destroys

these vital properties (Vitamines) of which infinitesimal quantities are required for the assimilation and utilisation of ordinary alimentary substances. They quote many animal experiments in support of these statements, most of which have been referred to in previous papers by these authors.

P. W. B-S.

i. WEILL (E.), MOURIQUAND (G.) & MICHEL (P.). **Recherches sur la carence alimentaire. Effets comparés de la nourriture exclusive des chats par la viande crue, congelée, salée, cuite et stérilisée.**—*C. R. Soc. Biol.* 1916. Mar. Vol. 79. No. 5. pp. 189–193.

ii. WEILL (E.), MOURIQUAND (G.). **Graines de céréales décortiquées, "hypercarencées" par la stérilisation.**—*Ibid.* pp. 194–199.

i. The authors fed cats on raw meat, frozen meat, recently salted meat, cooked meat, and meat recently sterilised or in which some time had elapsed since the sterilisation. One or two cats were used in each experiment. It was found that raw meat, frozen meat, and meat recently salted did not cause in any of the animals the nervous symptoms associated with deficiency. Meat recently sterilised caused the appearance of nervous symptoms on the 35th day in one case (death on the 39th), and on the 39th day in another (death on the 40th). Sterilised meat kept for 14 months caused nervous symptoms on the 25th day and death on the 30th; in other cases symptoms on the 35th and, in the case of a cat fed on sardines, on the 27th (death on the 30th). These nervous symptoms, consisting of paraplegia, convulsions or cerebellar disturbances, were very similar, if not identical with those caused in pigeons by the sterilisation or decortication of cereals. It appears as if sterilisation took from meat, just as it takes from grain, a "ferment substance" necessary for nutrition.

ii. The authors have shown that the decortication of cereals caused in pigeons, fed on them, paralysis of the beriberi type and death, and that the same results are produced by sterilisation of undecorticated cereals at 120° for one and a half hours. They thought it possible that in the case of the raw decorticated cereal the grain might contain small doses of vitamine sufficient to delay the appearance of symptoms. They therefore experimented with pigeons with raw decorticated cereal and with the same decorticated cereal sterilised by heat at 120°. The pigeons were artificially fed with exactly the same quantities of each description of grain. The result showed that the pigeons fed exclusively on raw decorticated barley had symptoms of deficiency on the 50th day and died, one on the 53rd and the other on the 60th day. Pigeons fed exclusively on the sterilised decorticated barley had symptoms of deficiency on the 38th and died on the 38th and 43rd day. Similar experiments were then made with raw and sterilised polished rice; the results were similar. That is to say, the "deficiency" is more complete in the sterilised than in the raw grain. They suggest that the results may be applied to flour made from such cereals and to man, prolonged cooking augmenting the danger of exclusive use of such flour.

A. G. B.

SEIDELL (Atherton). **Vitamines and Nutritional Diseases. A Stable Form of Vitamine, efficient in the Prevention and Cure of Certain Nutritional Deficiency Diseases.**—*U. S. Public Health Rep.* 1916. Feb. 18. Vol. 31. No. 7. pp. 364–370. With a chart.

The author notes that in all attempts which have so far been made to isolate vitamines in sufficient quantities for experimental studies, only very small yields have been obtained, owing apparently to destruction of the physiologically active substances during the various steps of the processes. Of the substances which have been shown to be rich in vitamines brewer's yeast is probably the cheapest; in most breweries the bottom yeast, remaining after each brew, is washed down the sewer. Filtered autolysed yeast was obtained by a method described.

"It [brewer's yeast] is first subjected to pressure in a hydraulic press for removal of the beer still retained by it. The press cake is then stirred with ice water and again pressed out. The cake is placed in enamel-ware vessels and brought to a temperature of 37·5° C. and held there for a period of about 48 hours. The autolysis is more or less complete at the end of this time and the material converted to the consistency of thick soup. After cooling to room temperature, the liquid is filtered through large folded filter papers."

It was found to contain about 23 per cent. of total solids. It will keep in a cool place for several months. When it was administered in 1 cc. doses on alternate days to a pigeon kept on a diet of polished rice, the pigeon did not lose weight or show symptoms within two months, whereas without the yeast filtrate it lost weight usually within the first five days and died within 20. The effective dose however for a man would be about 200 cc., so that it was necessary to concentrate it.

The procedures employed included vacuum distillation, evaporation in a current of dry air, and freezing and removing the ice by centrifugation. The concentrated liquid however became more and more syrupy and could not be converted to a solid. Alcohol was then tried, but vitamine was found both in the solid and in the filtrate. Attention was then turned to the absorptive quality of Fuller's earth for alkaloids, as shown by Professor John Uri LLOYD of Cincinnatti. It was thought that this might remove the vitamine from the autolysed yeast filtrate. Such proved to be the case. In the first experiment a relatively large amount of "Lloyd's reagent" was used—200 gm. per litre of yeast filtrate. The mixture was thoroughly shaken and filtered and the solid residue was dried.

"The feeding experiments were conducted on a group of 12 pigeons. They were kept in a large cage and given as much polished rice as they would eat. They were weighed and dosed as follows at intervals of two to three days: Two of the pigeons were given 3 cc. doses of the original yeast filtrate (Y. F.), three received doses of 0·6 gram of the activated solid (A. S.) corresponding to 3 cc. of Y. F., three received 3 cc. doses of the filtrate from the activated solid (F.A.S.), and four were retained as controls.

"The results are plotted on the accompanying chart. It will be seen that the pigeons receiving the autolyzed yeast filtrate and the solid activated by being shaken with the yeast filtrate, not only showed no ill effects from the exclusive diet of polished rice, but actually gained considerably in weight. The controls and those receiving the filtrate from the activated solid all developed the typical paralysis of polyneuritis within from 11 to 23 days. The experiment, therefore, proves conclusively that, using a ratio of 200 grams per liter, the absorptive agent removes the vitamine promptly and completely from autolyzed yeast filtrate."

The author then proceeded to ascertain how small a proportion of the solid reagent would absorb the vitamine completely. This quantity was found to be 50 gm. per litre.

"On the basis of the above-described experiments the procedure which has been adopted for preparing activated solid from autolyzed yeast liquor is as follows: To a large volume of clear autolyzed yeast filtrate is added 50 grams per liter of the colloidal hydrous aluminium silicate reagent as prepared by Professor Lloyd, of Cincinnatti for alkaloidal separations. The mixture is well shaken and allowed to stand several hours until the supernatant liquid is practically free of suspended solid. The dark liquid is then siphoned off and about an equal volume of water and enough standard hydrochloric acid is added to yield an approximately N/100 acid solution. The addition of this small amount of acid is necessary to hasten subsidence of the solid. After shaking and allowing to stand the supernatant liquid is again siphoned off. The solid is washed a second time with the very dilute acid and then poured upon a large Buchner funnel and washed several times with small portions of water and finally with about three small portions of 95 per cent. alcohol. The solid is then spread out on paper to permit the evaporation of the major part of the alcohol and finally dried to constant weight in vacuum desiccators containing concentrated sulphuric acid."

Both preventive and curative experiments on pigeons have been made and the results agree with those already given; 0·05 gm. of the activated solid on alternate days is sufficient to keep the pigeon in normal health and weight on an exclusive diet of polished rice and will cure paralysed pigeons. The comparative dose for a man would be 10 gm. of the solid on alternate days, which could be conveniently taken either in capsule or as an aqueous suspension. The author expects it to prove effective in beriberi. If it is not effective in pellagra, the concentration method could be applied equally well to some other raw product.

A. G. B.

MISCELLANEOUS.

KINGSTON, JAMAICA. **Ninth Six-Monthly Report of the Government Bacteriologist. March-September 1915.** [SCOTT (H. H.). Government Bacteriologist.] M.S. Report received in Colonial Office.

This is a long Report forwarded for transmission to the Tropical Diseases Research Committee. The matter is considered under the headings Routine Work and Research Work.

Routine Work.—

Details of this are given in a table. Of 5,291 examinations 1,957 were of faeces for ankylostomes, 1,040 of rats for plague, 598 of blood smears, and 569 were Widal's reaction for enteric.

Widal's Reaction.—Of the 569 sera subjected to this test 183 gave positive results; 166 agglutinated *B. typhosus* only; 4 *paratyphosus A*; 2 *paratyphosus B*; while 10 showed a double infection with *B. typhosus* and *paratyphosus A*. Enteric fever prevails most extensively in Kingston. The reasons for this have been detailed in a paper already published by the author [this *Bulletin*, Vol. 7, p. 36], where it is shown that there are considerable numbers of unrecognised carriers and deficient methods of conservancy with a good water supply.

Blood smears.—Of 481 sent for examination for malarial parasites these were found in 90 instances: *P. falciparum* was present in 72, the parasites of benign tertian and quartan 12 times each. Microfilariae were never seen.

Examination of faeces for ova.—Tables are given on this subject. The numbers correspond very closely with those noted for the previous six months. "In other words, in spite of the thymolization which is carried on, the infection (particularly important with regard to ankylostomiasis) is not being checked and, in fact, is not even remaining stationary, but tends to increase." The type of helminth infection has a peculiar distribution. Thus at Annotto Bay ankylostomes alone were present in 82 per cent., but at Linstead only 13 per cent., whereas ascaris was found in less than 7 per cent. at Annotto Bay and 45 per cent. at Linstead.

Attention is drawn to the frequency of tuberculosis of the lungs. In 66 specimens out of 154 sent up *Bacillus tuberculosis* was found. The case is given in detail of a private of the West India Regiment who was admitted to hospital for haemoptysis with a temperature of 104·8°. The following day friction sounds were audible over the chest and there was considerable respiratory distress. Amoeba-like bodies having been seen in the expectoration emetin was administered; eventually the patient was discharged well.

"Repeated examinations for bronchomycosis, spirochaetes, paragonimus, and tubercle bacilli were negative; the amoeba-like bodies were the only organisms which appeared to have anything to do with the causation of the illness. They disappeared with the administration of emetine, reappeared temporarily with return of the symptoms on withholding the drug, and disappeared again on its readministration."

An account is given of some autopsies of special interest. Of the 1,040 rats examined for plague none was found infected.

Research Work.—

The So-Called Vomiting Sickness of Jamaica.—The account given of Dr. SCOTT's investigations covers reports which have been noticed in this *Bulletin* [Vol. 6, pp. 426–7]. There is added the report of a recent case of poisoning by the fruit of the ackee, with details of the autopsy. The author's summary is given in full :—

" 1. The term ' Vomiting Sickness ' has been used for many years as a comprehensive name for various diseases, including cerebro-spinal meningitis, gastritis, gastro-enteritis, worms, malaria ; in fact, practically any disease occurring in the cooler months and associated with vomiting and convulsions.

" 2. During the last ten years opinions have been expressed to the effect that there is an affection called vomiting sickness whose course of symptoms and post-mortem changes are not those of any known disease.

" 3. The death-rate from this affection is exceedingly high, 80 per cent. to 90 per cent., and a fatal termination occurs in a few hours.

" 4. The first systematic investigation into the affection was undertaken by Captain (now Major) T. J. Potter, R.A.M.C., who came to the conclusion ' that the majority of deaths ascribed to the so-called vomiting sickness are due to yellow fever ' (1911).

" 5. To this succeeded the ' meningitis era,' a recrudescence of the older idea that some cases at all events included under the term ' vomiting sickness ' died from cerebro-spinal meningitis.

" 6. Seidelin's investigation took place the following year (1913) but, though he was the first to give a detailed description of the morbid anatomy he did not succeed in solving the question of causation. He showed, however, that there was a definite unexplained condition comprising the majority of cases reported as vomiting sickness and that the condition was neither yellow fever nor cerebro-spinal meningitis.

" 7. Investigations into a typical and severe outbreak at Montego Bay in February 1915 revealed the fact that in a majority of the cases in which a reliable history was obtainable ackees formed part of the last meal taken in health, and that this article of food could not be excluded in a single case.

" 8. Persons taking the ' soup ' or ' pot-water ' made with ackees in certain conditions showed the most acute symptoms ; the onset occurred in two hours and death nearly always resulted.

" 9. ' Salt-fish,' a frequent article of diet, is in the country parts used as a euphemism for ' salt and ackee.'

" 10. Ackees under certain conditions are undoubtedly poisonous ; among such conditions are : (i) Unopened ackees ; (ii) ackees picked from a decayed, bruised, or broken branch ; (iii) ackees which have not opened naturally, but which have been forced open ; (iv) ackees with a soft spot in an otherwise apparently sound fruit.

" 11. Much of the poison is extracted by boiling with water.

" 12. The symptoms of a case of typical vomiting sickness are : Initial vomiting (gastric in origin) coming on in apparently perfect health ; a period of a few hours improvement, succeeded by secondary vomiting (cerebral) rapidly followed by convulsions, coma and death. The average total duration of illness is 12½ hours.

" 13. Initial, or secondary vomiting, or convulsions, may be absent, but not in a large percentage.

" 14. Recovery, so far as I am aware, has never occurred when once convulsions set in, or coma ; and, as a corollary to this, in no case which recover are convulsions seen.

" 15. The affection is largely one of childhood, and shows no predilection for sex.

" 16. A reasonable interpretation of the symptom is : Some poison is taken, or some substance which acts as a poison after it enters the stomach. If the initial vomiting is sufficient to get rid of this substance no further symptoms occur, and recovery rapidly ensues. If this is not the case, there is an interval—a more or less quiescent period of absorption—after which there follow symptoms due to the action of the poison on the higher centres—secondary (cerebral) vomiting, convulsions, drowsiness, coma, and death.

"17. In rare instances the cerebral symptoms are those first noticed (convulsions, drowsiness, coma); there is no preceding vomiting—the so-called 'vomiting sickness without vomiting.'

"18. The pathological changes consist chiefly of general hyperaemia and a tendency to haemorrhages in various organs, fatty metamorphosis especially in liver and kidneys, and necrobiotic changes of epithelia in liver, kidneys, and pancreas.

"19. Micro-organisms are rarely found in true vomiting sickness cases, and, when present, are probably accidental and have no pathological significance.

"20. Intragastric administration of an extract made by boiling unopened ackees with water produced in three kittens and one pup the symptoms and pathological changes seen in cases of vomiting sickness.

"21. A case of ackee poisoning in a human subject exhibited the same symptoms, course, and post-mortem changes, macroscopical and microscopical, as (*a*) human vomiting sickness cases, and (*b*) animals to whom an aqueous extract of unopened ackees had been administered.

"22. The characteristics of vomiting sickness, viz.:—i. Peculiar seasonal prevalence; ii. Its confinement to Jamaica, so far as is known; iii. The sudden onset of symptoms in apparent good health, and in the well-nourished as in the emaciated; iv. The rapid and complete recovery of non-fatal cases; v. The affection of several members in one house or close neighbours in a settlement; vi. The vastly greater preponderance in children; vii. The absence of preference as regards sex; viii. The rarity of occurrence in White children and in East Indians; ix. The pathological changes induced; All find explanation in the view that the condition is an acute intoxication by unopened or unwholesome ackees—the fruit of *Blighia sapida*."

It is stated that further experimental work will come within the domain of the chemist. Fifteen excellent photographs illustrate the pathological changes in ackee poisoning in a human subject, in the tissues of animals dying after experimental infection with ackee extract, and in "vomiting sickness" in human subjects.

Pellagra.—This investigation was carried out by Dr. Catto, Assistant Bacteriologist. The object was the histological investigation of tissues taken from pellagrins postmortem, with special reference to the possible parasitic nature of the infection. The material was obtained from six female patients who died in the Kingston Lunatic Asylum. The technique is detailed, and an account is given of the changes found in the nerve cells, kidney, liver, heart, spleen, pancreas, and intestine. No specific bacteria of any kind were discovered in the specially stained sections of the internal organs. The author did not find any protozoa, but thinks that the hypothesis of an intracellular parasite cannot be dismissed lightly.

A. G. B.

Khartoum. **Report upon the Research Work of the Wellcome Tropical Research Laboratories, Khartoum, 1915.** [Chalmers (Albert J.), Director.] M.S. Report received in Colonial Office December 27, 1915.

This Report, it is stated, covers the work performed during the year 1915 by the Bacteriological Section and such portions of the work of the Chemical and Entomological Sections as are thought to be of interest with regard to tropical medicine and hygiene. It is noted that the Bacteriological Section has been short-handed owing to the war, and that the routine work has more than doubled owing to changes in the British regiments stationed at Khartoum and to an epidemic of cerebro-spinal meningitis.

Bacteriological Section.

The work is classified under the following heads :—(1) Streptococcal Infections ; (2) Puerperal Fever ; (3) Amoebic Dysentery ; (4) Skin Diseases ; (5) Kala Azar ; (6) Cholera ; (7) Beriberi. There was also work published on the classification of Fuckel's Fungi Imperfecti as seen in tropical medicine.

Streptococcal Infections.—As the state of knowledge with regard to the species of BILLROTH's genus *Streptococcus* was found to be very confused a provisional diagnostic table was constructed. This is the table which appears on page 395, in which the Streptococci are divided into ten groups. It is stated that there is doubt as to the existence of Group 5, the Gasogenous or Mastitidis group, and also Group 6, the Non-fermenting group. In working with these organisms Holman's medium has been found of great service. "This laboratory has almost entirely given up the qualitative examination of the fermentative action of organisms in sugars as the quantitative examination has been found to be much more satisfactory not merely for streptococci but also for other bacteria." The papers published, or to be published, are by CHALMERS and HADDAD on a case of septicaemia in which *Streptococcus equinus* Andrewes and Horder 1906 was found in the blood ; one by CHALMERS and ATIYAH in which *S. salivarius* Andrewes and Horder 1906 and *S. bovis* Chalmers and Atiyah 1915 were described as causes of puerperal fever ; CHALMERS and MARSHALL have written an account of some pathogenic "Faecalis" streptococci found in the Sudan.

Puerperal Fever.—CHALMERS and MARSHALL have found this to be in the Anglo-Egyptian Sudan mostly a local uterine infection and not commonly a septicaemia. Two causal organisms are *S. salivarius* and *S. bovis* (=*S. bovinus* Broadhurst 1915). CHALMERS and MARSHALL have found cases in which the causal organism was *S. versatilis* Broadhurst 1915, a member of the "Faecalis" group, and another due to *S. faecalis* Andrewes and Horder 1906. The sources of infection in the Sudan appear to be principally from human, equine and bovine faeces, the two latter being largely used in Khartoum and Omdurman as an application called "Zibla" which is applied to roofs and walls. Cow dung is also used as a poultice by the natives.

CHALMERS and O'FARRELL described the treatment of two cases of "Faecalis" infection with heterologous and homologous vaccines.

Amoebic Dysentery.—CHALMERS and ARCHIBALD have studied methods by means of which they think it may be determined that a given patient is free from infection [this *Bulletin*, Vol. 6, p. 444]. They have also dealt with the subjects of cryptic or latent infections and amoebic carriers.

CHALMERS and PAPATHEODOROU have written on the administration of emetin during pregnancy and menstruation, showing that it can be given in these conditions without serious harm in a maximum daily dose not exceeding half a grain [*loc. cit.*, p. 445].

Skin Diseases.—CHALMERS and O'CONNER have investigated a small epidemic of Pyosis corletti, a bullous eruption, which broke out in the Welsh Regiment. They traced the cause to an organism called *Aurococcus mollis* Dyar 1895 and showed that the origin of the whole outbreak was a case of Nile boils affecting an officer, *A. mollis* being the causal organism of that condition in the Sudan [*loc. cit.*, p. 133].

They note that WATERFIELD has for the first time reported an epidemic of Pyosis mansoni in the Sudan. CHALMERS and MARSHALL have described a case of Tinea capitis tropicalis caused by *Trichophyton discoides* Sabouraud 1909 [*loc. cit.*, p. 134]. The eruption resembled that which might be produced for purposes of malingering. It is believed that the disease may occur in the delta of the Nile as well as in the Sudan. CHALMERS and MACDONALD found that this organism grew well on a donkey, but not on a bull or a monkey [p. 135].

CHALMERS and MACDONALD have found a variety of *T. violaceum* in Khartoum and have named it *T. violaceum* var. *khartoumense* [*loc. cit.*, vol. 7, p. 123]. The common favus of the Sudan has been found to be *Achorion schoenleini.*

"The Ringworms known at present to exist in the Anglo-Egyptian Sudan are therefore :—

A. *Those usually without exudation or inflammation.*
   a. *Trichophyton currii* described in last year's report.
   b. *Trichophyton violaceum var. khartoumense* mentioned above.

B. *Those associated with exudation or inflammation or both.*
   c. *Trichophyton discoides* mentioned above.
   d. *Achorion schoenleinii,* which is very common in the Sudan and is the cause of Favic Alopecia or baldness."

CHALMERS and DREW have given a differential diagnosis of "Atrophodermia biotriptica" [*loc. cit.*, vol. 6, p. 139].

Kala Azar.—Captain ARCHIBALD has studied the epidemiology of this disease along the banks of the Blue Nile. It makes its appearance at the end of or after the rains and is comparatively rare in females. He believes that water is the medium of infection, which is via the alimentary tract.

Cholera.—The same observer investigated two cases of cholera in Omdurman, where the disease has not been recorded for a number of years.

Beriberi.—A curious disease clinically resembling beriberi has been noted by Captains STIRLING, O'CONNER and FARROW, R.A.M.C., as occurring amongst the British regiments stationed in Khartoum. CHALMERS and ARCHIBALD in 1913 met, post mortem, with some curious fungal bodies in the nerves, and in 1914 ARCHIBALD found similar bodies in prepared specimens. These findings raise the question whether there may not be more than one type of disease found under the clinical term beriberi [this *Bulletin*, Vol. 6, p. 428].

An outline is given of the classification by CHALMERS and ARCHIBALD of the Fungi Imperfecti ; it is too long for reproduction.

Mr. MARSHALL, Senior Bacteriological Laboratory Assistant, has published an account of a method, suitable for the tropics, of preparing Buchanan's medium, found of great use in isolating the meningococcus from nasal swabs. Attention is directed to the work on *Spirochaeta bronchialis* Castellani 1907, begun by Dr. FANTHAM in Khartoum [this *Bulletin*, Vol. 6, p. 211]. A list of references is given to 16 papers published.

Chemical Section.—BEAM and FREAK have published a paper on "A Greatly Improved Haemin Test for Blood with Notes on Some Recently Proposed Methods." In hot countries like the Sudan blood stains alter more rapidly than in more temperate climates, so that the Teichmann test has been largely abandoned. The technique of the test is detailed. It was found equally applicable to "blood stains

fresh or old (12 years), stains partially removed by soap and water, or heated to 110°, or mixed with earth, or to old stains on rusty iron which had been exposed to strong sunlight and atmospheric conditions for several days."

Entomological Section.—Mr. Harold King has written papers on the life-history of *Argas brumpti* Neumann and on locust destruction.

A. G. B.

Bulletin of the St. Louis University. 1916. Jan. Vol. 11. No. 6. 41 pp.—**The St. Louis University Expedition to British Honduras for the Study of Tropical Diseases.**

This Report is submitted to the authorities of the St. Louis University School of Medicine by Dr. J. P. Coony, Ph.D., S.J., and Mr. A. M. Schwitalla, S.J. The leader of the expedition, Dr. E. N. Tobey, who should have compiled the Report, was most unfortunately lost in a hurricane. With him also were lost a large number of case histories, blood specimens and photographs, so that the material for the Report is small. An account is given of the life and work of Dr. Tobey, and a list of his publications. On a description of the origin of the undertaking, which was planned as a preliminary expedition for the purpose of studying methods of procedure, equipment, organisation and personnel, there follow extracts from the diary of the expedition. It left St. Louis on July 19th and reached Belize on the 25th. Dr. Tobey left the rest of the party at Punta Gorda in order to visit the hospital of the United Fruit Company, Guatemala. On August 12th he re-embarked for the States and on the 14th the vessel encountered the West Indian hurricane in which it is believed that all on board lost their lives.

A summary of the observations of the expedition is given under the headings People, Country, Climate, Water Supply, Food Supply, Sewage Disposal, Soil, Habits of the People, Health Laws, Medical Supervision, Hospitals and, lastly, an account of the tropical diseases which occur. These are malaria, hookworm, tropical ulcer (which is believed to include a number of forms), and diseases of rarer occurrence such as blackwater, dengue, yellow fever, dysentery, sprue, leprosy, Bay sore (which is probably due to *L. tropica*), beriberi, climatic bubo, pinta, the usual intestinal parasites, and three pathological conditions of the skin of insect origin. These are due to the chigger flea, the screw worm, and the "beef worm" (*Dermatobia cyaniventris*). Three insect pests which cause much inconvenience are the sandfly, the "botlass" fly and the "doctor" fly; these have not been identified. Baracouta poisoning is common in the summer months.

The authors recommend the establishment of a biological station in British Honduras.

A. G. B.

Billings (W. C.). **The Exclusion of Tropical Diseases by Means of Immigration Inspections.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1915. Aug. Vol. 3, No. 2. pp. 74–83.

It is noted that bubonic plague, yellow fever, cholera and leprosy do not come into consideration, because they come under the regulations for "quarantinable" disease. These, with the exception of leprosy, are acute whereas the "immigration diseases" are chronic

or prone to chronicity. The methods of examination of aliens arriving at San Francisco are described ; those afflicted with detectable tropical disease are practically always orientals.

In the last three years the following diseases have been detected :—" Uncinariasis (2,398), Trichocephaliasis, Ascariasis, Schistosomiasis, Clonorchiosis, Strongyloidosis, Balantidic Dysentery, infection of the intestinal tract by *Taenia nana, Taenia saginata, Taenia solium, Taenia bothriocephalus latus*, the *Fasciolopsis buski*, and the *Diplogonoporus grandis* ; Malaria, Liver Abscess, Sprue, Beriberi, Elephantiasis, Leprosy, Tropical Dysentery." A. G. B.

MITCHELL (D. A.). **Some Effects of Damp Heat.**—*Jl. State Med.* 1915. Sept. Vol. 23. No. 9. pp. 277–282.

As surgeon on H.M.S. " Alert," the author had for two years the opportunity of studying the diseases to which naval men are subject in the damp heat of the Persian Gulf in the summer months. He has watched the same men in three other climates under almost identical conditions of living and dietary. These were the hot dry climate of the Shatt-el-Arab river at Basra in the summer months, the moderately hot and damp climate of Bombay and Colombo from September to February, and the almost ideal climate of the Naval Camp in the hills of Ceylon during the same months. The expression " damp heat " is used to represent roughly a dry bulb temperature between 90° and 100° F. and a wet bulb reading within 5° of this. In the dry heat of Basra there might be 30° difference between the dry and wet bulb readings, the former rising to between 105° and 115° F. The diseases that he discusses are boils, inflammation of the external auditory meatus and a pyrexial condition.

The most prevalent affection was that of boils. Diet could be excluded as a cause, as at Basra and the Naval Camp boils were rarely seen. There was hardly any constitutional disturbance. Healing was very obstinate. The only means of preventing the boils was change of climate. The effect of this was observed on three occasions, twice when the ship left the Gulf for Colombo, and once when she went up the river to Basra ; in the dry heat of the latter healing took place quickly, at Colombo and Bombay less quickly, but more so than in the Gulf. The author suggests that the condition was " primarily due to some alteration in the blood dependent upon the damp heat." Microscopical examination of the blood showed as a rule an appreciable degree of anaemia, but nothing else abnormal.

Inflammation of the external auditory meatus was presumably due to the same cause. In the dry heat of Basra very few of these cases occurred and the few taken there were easily cured.

The pyrexial disease was seen in five cases, two of which occurred at Basra and three in the Gulf.

" Briefly, the condition was one of prolonged low pyrexia, giving rise, after ten to fourteen days, to a very severe anaemia, and about a week later to an increasingly rapid pulse. The onset was fairly sudden, the temperature rising to 102° or 103° F., with general malaise, and usually a few scattered râles in the chest. A sore throat was present in two cases. The temperature fell irregularly to normal during the first week, to rise again in a curve which reached normal in another seven days. The summit of this curve was lower than that of the first week, and the curve of the third week was still lower, until, during the fourth or fifth weeks, the temperature hovered irregularly within a degree and a half of normal.

"The anaemia, commencing after about ten days, progressively increased; but, apart from some general weakness, these patients felt absolutely well after the first week. The pulse began to rise about the fourth week, and in two cases increased until 140 beats per minute were frequently recorded."

The two cases which commenced in the dry heat continued for six weeks in the Persian Gulf, but were "practically cured in the run from Muscat to Colombo," occupying 10 days. Blood examination showed nothing beyond simple anaemia. The author thinks that this disease "would seem to be dependent upon heat, whether acting directly upon the thermo-genetic centre in the brain or through the blood stream."

Sunstroke was rarely seen. Seven cases of an early stage of beriberi were noted in the Gulf, where it is commonly known as "pelagic oedema." The author was struck by the comparatively large number of kidney cases which occurred in the hot weather in the Gulf. These comprised acute nephritis, pyelitis and tubercle.

He has come to the conclusion that "damp heat of itself frequently produces an alteration in the blood, visible only as anaemia, and this alteration is primarily responsible for the difficulties encountered in the treatment of other conditions." [Unfortunately no details are given of blood examinations.]

A. G. B.

CADDY (Adrian). **Life Insurance in India.**—*Trans. of the Life Assurance Med. Officers' Assoc. London for 1912 & 1913.* 1914. London. pp. 33–70.

This paper, which was read before the above-named Society in March 1912, contains information which is of general interest. The records on which the data are based have been kept since the year 1892, that is for 19 years. The author and his brother at Calcutta had, up to the end of 1910, revised the papers of other examiners in 5,179 cases and had examined personally 6,276 cases, making in all 11,455. Of these 3,365 were Europeans, 530 Eurasians and the remainder natives of India, chiefly men from Bengal. It is noted that the hill men are not an insuring class, and that the men of the plains probably vary less from one end of India to the other than do races in Europe.

After a discussion, with tables, of the heights and weights of the native races the author gives the causes of rejection amongst European and native races. The following table is of cases examined only, percentages loaded and declined being added together:—

Disease.	Europeans (1,799).	Bengalis (3,483).
Inferior physique	1·55 per cent.	5·36 per cent.
Obesity	2·11 ,,	5·34 ,,
Glycosuria	·61 ,,	3·24 ,,
Albuminuria	1·22 ,,	1·98 ,,
Consumption	·44 ,,	·91 ,,
Consumptive family history ..	1·38 ,,	·77 ,,
Bad family history	·5 ,,	·63 ,,
Syphilis	1·0 ,,	·34 ,,
Heart disease	1·05 ,,	·89 ,,
Sundry diseases	3·39 ,,	4·96 ,,
Elephantiasis	—	·22 ,,
Alcoholism	·72 ,,	·22 ,,

Inferior physique or obesity means 20 per cent. under or over the mean weight for a particular height; it is suggested that probably malaria and dysentery in youth and occasional famine account for the inferior physique, and an excessive carbohydrate diet and insufficient exercise amongst the well-to-do for the obesity. The difference between the figures for glycosuria is striking; the author would appear to attribute it to the carbohydrate diet consumed by the natives. The figures for heart disease among natives are lower than among Europeans owing, it is said, to the rarity of rheumatic fever in India. After remarks on vaccination and hernia the author comes to his figures for hydrocele, giving tables from both his revisions and examinations. Among 3,483 Bengalis examined 178 or 5·10 per cent. suffered from hydrocele, and among 2,134 Europeans 16 or ·74 per cent. Figures for other Indian races are too small to be of value. With regard to Eurasians the author thinks that, as the percentage of Asiatic blood increases, so does the percentage of hydrocele. There are inconclusive discussions on opium and Indian hemp consumption.

With regard to the question of acclimatisation in the tropics the author "with much diffidence" quotes his own experience:—

"1. We think that the European does not acclimatise in the tropics; meaning by this, he is unable to rear healthy, strong children in India, that he is unable to continue in the same state of health as he was in on arrival in the country.

"2. Quite apart from the effects of tropical diseases, we think that the European gets debilitated by residence in the tropics and at least every four or five years requires a change to a temperate climate. As regards Europeans, Calcutta is one of the most healthy cities in the East; the Europeans live in a well-drained part, and have every convenience of water supply and electric fans, malaria and dysentery are uncommon; and it frequently occurs for them to live periods of several years without any illness at all; yet in spite of this, Government and mercantile offices have to give their staffs regular leave home to get full work out of them.

. . . .

"4. The children of Europeans, who have been sent home when four or five years old for their education (the customary age) are generally not so fine physically as their parents, owing to the debilitating influence on their constitutions of the tropical climate at an important growing period of their lives."

A. G. B.

GALLI-VALERIO (B.). i. **Notes de parasitologie et de technique parasitologique.**—*Cent. f. Bakt.* 1. Abt. Orig. 1914. Aug. 29. Vol. 75. No. 1. pp. 46–53. With 5 text-figs.

ii. **Parasitologische Untersuchungen und parasitologische Technik.**—*Ibid.* 1915. Aug. 25. Vol. 76. No. 7. pp. 511–518.

These papers contain contributions to the geographical distribution of parasites, bacteriological and protozoal observations. observations on helminths and arthropods, besides notes on technique. Of the various subjects the following are of interest to readers of this *Bulletin*:—

An acid-fast bacterium was found in the preputial glands of a *Mus rattus* at Lausanne. It is described and figured. Attempts to cultivate it failed. It suggests *M. smegmatis* of man, but much more so *M. leprae*. The name of *M. smegmatis* var. *muris* is proposed.

It was found that the eggs of several helminths could be kept in faeces covered with a thin layer of water for a long time without

change of form—those of *A. lumbricoides* from 1897 to 1909, when the embryos were well preserved but immobile; those of *N. americanus* for $4\frac{3}{4}$ years; those of *H. diminuta*, with embryo and alive, for $2\frac{1}{2}$ months. A series of experiments to determine the time required to destroy eggs of *A. lumbricoides* and *T. trichiurus* in faecal matter showed that concentrated sulphuric acid alone was effective.

DOBERNECKER has examined the body fluid of some female *A. lumbricoides* with the spectroscope and found the bands typical of vertebrate blood. The author has examined a female worm of this species, which had a reddish appearance, and obtained a strong blue coloration of benzidine paper besides crystals of haemochromogen. This supports the view that *A. lumbricoides* is a blood-sucker.

It is well-known that *Lynnaeus truncatula* is the intermediate host of *Fasciola hepatica*. The author last summer noticed in a puddle that specimens of *Aulastoma gulo* attached themselves to *Lynnaeus* and sucked at the shell. He put two *A. gulo* in an aquarium with *L. truncatula*; in a very short time they disposed of five snails. It would perhaps be useful to distribute this leech in districts where distomiasis prevails.

A. G. B.

FRAGA (Clementino). **Relações pathologicas entre o figado e o baço; aspectos clinicos da pathologia hepato-esplenica nos climas quentes.** [The Pathological Relationships of the Liver and the Spleen; Clinical Aspects of their Pathology in Hot Climates.]—*Brazil Med.* 1915. Aug. 1. Vol. 29. No. 29. pp. 225–227; Aug. 8. No. 30. pp. 233–235.

A clinical lecture on the subject indicated by the title. The principal point insisted on is that the functional incompetence of the liver so often met with in tropical climates is chiefly due to the circulation through it of unhealthy blood coming from the spleen. The malarial liver is therefore secondary to a malarial spleen, and the same thing occurs with kala azar and other similar complaints. Enlargement of the liver without associated enlargement of the spleen is always to be put down to errors of diet, and not to such causes as malaria.

[Of course this view has often been expressed before.]

J. B. Nias.

RUEDIGER (E. H.). **The Occurrence of *Bacillus coli communis* in the Peripheral Blood of Man during Life.**—*Philippine Jl. Sci.* Sect. B. Trop. Med. 1915. Jan. Vol. 10. No. 1. pp. 25–29. With 3 charts.

The author notes how few cases of blood infection with *B. coli communis* during life have been reported. During routine bacteriological examination of blood at the Philippine General Hospital he has seen four such cases; two died and two recovered; all were Filipinos. Details are given with temperature charts. His conclusions are as follows:—

"1. Microörganisms corresponding in morphological and cultural characteristics to *Bacillus coli communis* may in certain cases be obtained from the peripheral blood of patients during life.

"2. Invasion of the blood stream by such organisms is not necessarily terminal infection, as is shown by the large percentage of recoveries therefrom.

"3. Such infection may be considered primary as is shown in case 3 here reported.

"4. As a peripheral infection like that of case 4 the bacillus may enter the blood stream through the infected uterus.

"5. The agglutination test shows that these organisms differ from one another."

A. G. B.

d'ANFREVILLE (L.). **Les hémorragies au Maroc.**—*Bull. Soc. Path. Exot.* 1915. Oct. Vol. 8. No. 8. pp. 595–596.

The author considers that the climate of Rabat on the west coast of Morocco has a "congesting tendency." Tubercular haemoptysis is more frequent there than in Europe, and also persons free from tuberculosis but with a "congestive disposition," or with some defect in the circulatory system, are subject to haemorrhages. At the hottest time of the year such persons produce blood-stained sputa and sometimes have true haemoptysis. Brief notes of nine cases in Europeans are added.

[These would have gained in value had the author given data of the European population, and some meteorological figures.]

A. G. B.

i. LOEWENTHAL (F.). **Klinische Erfahrungen über ein neues Darmadstringens "Etelen."** [Clinical Experience with a New Intestinal Astringent "Etelen."]—*München. Med. Woch.* 1915. Dec. 21. Vol. 62. No. 51. pp. 1748–1750.

ii. SEIFERT (Otto). **Ueber Etelen.**—*Ibid.* pp. 1750–1752.

i. The author lays down that for the treatment of inflammatory intestinal diseases an astringent, if it is to be free from objection, must (1) not act as a caustic in any form; (2) develop its astringent action first in the intestine, sparing the stomach mucosa and not interfering with the appetite; (3) the action of the tannic acid must extend to the lower section of the gut. Such a substance was put on the market a year ago by the firm of Fr. Bayer & Co. It was at first called Trigallacetol and recently has been given the name of Etelen. It is described as the triacetylethylester of gallic acid and is therefore chemically nearly allied to tannigen. Experiments on animals have been made by DRESER, but the reference to these is not given. Etelen is a white tasteless powder. It is sold in tablets, 15 half gram tablets to a tube; they are given in water, tea or milk.

The author has tried this remedy in hundreds of diarrhoea cases of every kind and especially of a specific character. Short notes are given of 37 cases which, it is said, have been taken without selection. The cases include dysentery, some of which are stated to be of Flexner or Y type, typhoid, paratyphoid, septicaemia, ulcerative colitis and bowel inflammation after cholera. The remedy is said to be extremely well borne.

The author's conclusions are to this effect:—Etelen is an astringent which acts promptly in most inflammatory infections of the bowel with diarrhoea. It often succeeds when all other remedies have failed. The author has not had a case in which the appetite was disturbed or vomiting was produced. The remedy has failed only in some cases of severe inflammation of the colon with ulceration, grave cases of

septicaemia, and tuberculous diarrhoea; in these cases almost all other drugs have likewise failed. The best dosage is stated to be 6 to 8 gm. a day in severe cases and half that amount in slight ones. It is advised that the preparation be continued some days after diarrhoea has ceased. Finally, a combination of etelen with adrenalin is recommended.

ii. This author has used etelen in about 50 cases of acute catarrh of the bowel, mostly summer diarrhoea, in 30 cases of tuberculous diarrhoea and 25 of urticaria from food. He gives an equally favourable account and points out that in nearly all cases colic was quickly reduced. Two of the cases of urticaria are described in detail. In his conclusions he states that in tuberculous diarrhoea etelen acts better than any other bowel astringent and he suggests that it has an antiseptic action. He says also that etelen keeps well in the tropics and suggests that it should be introduced for acute and subacute forms of amoebic enteritis.

A. G. B.

JOHNSTON (Reginald). **Pituitrin, with Special Reference to its Action during Pregnancy and Labour on European Women resident in the Tropics.**—*Dublin Jl. Med. Sci.* 1915. Oct 1. 3rd Ser. No. 526. pp. 241–260.

This communication was a thesis submitted for the degree of Doctor of Medicine. The author gives a historical account of the discoveries in regard to the pituitary body; he describes its anatomy and development and gives a synopsis of the physiological work which has been done, and of the pathology and pharmacology. He uses pituitrin, the extract prepared by Parke, Davis and Co. In two instances in which the preparation of another well known firm was employed, the results were "somewhat startling." He gives an account of 16 cases, 9 primiparae, treated. He has come to the following conclusions:—

"1. The child must lie in the long axis of the uterus and present preferably by the head.

"2. There must be no pelvic contraction beyond a very slight amount, and no obstruction of any kind to labour. Rectum and bladder *must* be empty.

"3. The os must be soft and easily dilatable.

"4. The dose should be 1 cc., not more, except in cases of inertia of multiparae. It should not be given more frequently than once an hour, and never more than 5 ccs. to any one case.

"5. Injection into the buttocks is the best way of introducing the drug.

"6. The best time to get the full effect of the drug is at the end of the first stage and with the membranes ruptured.

"7. The drug has more effect at full term than at any other period of pregnancy.

"8. It is well to give a routine dose of 1 cc. to every case that fulfils the conditions necessary for the use of the drug because of the great help it is in causing the detachment of the placenta.

"9. The perineum must be especially guarded, as the pains caused by the pituitrin are of great expulsive force. Chloroform diminishes the intensity of the pains, and if pushed causes their disappearance.

"10. The milk-increasing power of pituitrin and its use as a peristaltic and diuretic, claimed by some authorities, do not seem to apply to Europeans in the tropics.

"11. Large doses frequently repeated seem to have a slight toxic effect on the mother and child.

"Where it has been possible I have instructed my patients to have a hot Sitz bath every evening for about a quarter of an hour for last three months of pregnancy, then to use pure olive oil as an inunction for the perineum and surroundings. I have removed all meat from their diet for the last four months. These details, with the usual care for general hygiene, seem to aid pituitrin in its effect."

A. G. B.

HINGSTON (C. A. F.). **The Uses of Pituitary Extract in Labour, at the Government Maternity Hospital, Madras.** [With a Note by Lt.-Col. G. G. GIFFARD.]—*Indian Med. Gaz.* 1916. Mar. Vol 51. No. 3. pp. 81–85.

During the last two years over 1,000 doses of pituitary extract have been given at the Government Maternity Hospital, Madras, to women in labour, cases of Caesarean section and to induce labour. The earliest time to give the extract to women in labour is when the cervix is "taken up." Chloroform inhalation or morphia injection should follow at once. There is no danger to mother or child when pituitary extract has been thus administered. The author considers the combination with chloroform to be the best method. He uses 1 cc. of Burroughs Wellcome & Co's pituitary extract (Infundin) and immediately thereafter gives chloroform till the patient has lost all reflexes. If the accoucheur is satisfied that the head will pass into the pelvic cavity without harm to the child, infundin may be given to drive the head into the cavity. The best place for injection is the upper arm. Chloroform is administered till labour is completed and, if the action of the infundin appears to be wearing off, a second injection should be given half an hour after and thereafter a third and even a fourth. Labour is nearly always completed two hours after the first injection. It is stated that the drug shortens labour by many hours. The membranes should be left entire as long as possible. If the infundin has not been given before the child is born it is advised to give it immediately after. In preventing post partum haemorrhage it seems to act in two ways—causing a slowing of the action of the heart as well as contraction of the uterine muscle. The 1,000 cases include face and breech presentations. As regards Caesarean section infundin was given in the author's eight cases a few minutes before the operation was begun. It is strongly recommended.

A note is added by Lt.-Col. G. G. GIFFARD, whom Major Hingston succeeded as professor of midwifery at the Medical College, Madras, also strongly advising the use of pituitrin in labour. He thinks that it may be brought into general use.

A. G. B.

CHALMERS (Albert J.) & HADDAD (George). *Streptococcus equinus* **Septicaemia in the Anglo-Egyptian Sudan.**—*Jl. Trop. Med. & Hyg.* 1915. Dec. 1. Vol. 18. No. 23. pp. 265–269.

A Sudanese who attended animals including a donkey injured his big toe, tearing off the nail. Later, when a gland in the groin had suppurated and burst he presented himself for treatment and was

admitted to hospital. On the sixth day his temperature rose suddenly and remained high till his death five days later with cellulitis in the groin and scrotum. His peripheral blood was cultured in broth and *S. equinus* Andrewes and Horder obtained. The morphological, biological, and cultural character of the Streptococcus are described. It produced a fatal septicaemia in rabbits when inoculated intravenously. The authors give their reasons for attributing this organism to the genus *Streptococcus* Billroth 1874 and go on to discuss the species giving a "provisional diagnostic table of [ten] streptococcal groups," nine of which are parasitic in animals. This species is to be placed in No. 7 group, the Equinus group [see below]. They discuss *S. equi* Schutz 1888, the cause of strangles in horses, and decide that this belongs to the next group, the Erysipelatis group. Their view is that the streptococcus which infected the man was acquired from equine faeces. *S. equinus* has not hitherto been regarded as pathogenic to man and this is the first time it has been seen in the Tropics.

A. G. B.

CHALMERS (Albert J.) & ATIYAH (Salim). **Streptococcal Puerperal Fever in the Anglo-Egyptian Sudan.**—*Jl. Trop. Med. & Hyg.* 1916. Jan. 1. Vol. 19. No. 1. pp. 1–13.

A long and interesting paper which cannot be summarised fully. The authors discuss tropical puerperal fever in general and point to the statistics furnished by one of then as to this disease in Ceylon. Whereas the annual deaths attributed to child birth among Europeans was 0·1 per cent., this figure was 1·2 for Sinhalese, 0·8 for Tamils, 1·1 for burghers, and 1·1 among the Mahommedan communities. BROOKE is quoted with approval as saying that "the mortality and morbidity from puerperal sepsis . . . among native communities are enormous." An account is given of the investigations into the aetiology of this disease from the earliest times, with a list of five known puerperal streptococci. Infection may be autogenetic or heterogenetic.

They obtained the strains of streptococci, here described, in pure culture from the intra-uterine discharges of six cases of puerperal fever occurring at Khartoum and Omdurman. The strains are divided into two series of three each, according as they ferment or do not ferment salicin. The strains of each series are then described, their morphological and cultural characters, biochemical reactions and pathogenicity. Cultures were in each case non-pathogenic to rabbits. For reasons given it is believed that all six strains belong to the genus *Streptococcus* Billroth 1874. Both series are to be placed in the Salivarius group, which is the bovine faecal type. The Salivarius group itself is defined.

To the salicin fermenting section is given the name *S. bovis*, the conclusion being that three of the strains belong to *S. salivarius* Andrewes and Horder 1906 and the other three to *S. bovis* Chalmers and Atiyah 1915, a description of which is given. They remark that it is difficult to prove the aetiological role of these streptococci and give their reasons for assuming it in these cases. Both species are found in human saliva and in cow's dung, and the question of the source of infection is discussed. They note that *S. salivarius* formed 64 per cent.

of the streptococci found in bovine faeces in America by FULLER and ARMSTRONG, and that cow's dung is used in the Sudan in at least three different ways—as a poultice and as washes or constituents of walls, roofs and floors. The diagnosis is discussed, malaria being the most important disease to bear in mind; it is considered that any fever attacking a puerperal woman in the tropics should be assumed to be puerperal fever till it is proved to be something else. Treatment and prevention also are gone into.

A. G. B.

CHALMERS (Albert J.) & MARSHALL (Alexander). **Pathogenic "Faecalis" Streptococci in the Anglo-Egyptian Sudan.**—*Jl. Trop. Med. & Hyg.* 1916. Mar. 1. Vol. 19. No. 5. pp. 54–62.

A third paper in this series. As the summary seems to contain all that is essential it is appended :—

"*Summary.*—Four cases of disease are described in which streptococci belonging to the Faecalis Group were found, and which belong to two distinct species, separated by the fermentation or non-fermentation of the trisaccharide raffinose, which must be a more difficult sugar to decompose than a mono-saccharide or disaccharide, and which therefore affords an important distinction.

"The two organisms are : –

"(1) *Streptococcus faecalis* Andrewes and Horder 1906, which we believe is now described for the first time as the causal agent in disease in the Tropics, being found in a case of septicaemia associated with endocarditis, and being also present in a traumatic pleural effusion, which may be illustrations of the peculiar way in which streptococci are attracted from their usual portals of entry to distant organs.

"(2) *Streptococcus versatilis* Broadhurst 1915, which has just recently been named, is now defined, for although its reactions have been noted by several workers in Europe and America, it had never been separated from *S. faecalis* or from the members of the Salivarius Group until Broadhurst's paper appeared in September of this year.

"This organism we found in a case of puerperal fever and in one of tonsillitis.

"The list of streptococci known to cause puerperal fever will therefore now include the following :—

"(1) *S. erysipelatos* Fehleisen 1883.
"(2) *S. foetidus* Veillon 1893.
"(3) *S. anaerobius* Lewkowicz 1901.
"(4) *S. mitior* Schottmüller 1903.
"(5) *S. salivarius* Andrewes and Horder 1906.
"(6) *S. puerperalis* Furneaux-Jordan and Mackay 1912.
"(7) *S. bovis* Chalmers and Atiyah 1915 (*S. bovinus* Broadhurst 1915).
"(8) *S. versatilis* Broadhurst 1915.

"We would also draw attention to the fact that streptococci may gain entrance to the circulation and may cause a subacute form of septicaemia and heart disease in the Tropics, as in temperate climates, though this happens much more rarely, as far as we know, in the former, which may be due to the influence of climate and especially of atmospheric temperature."

In all three papers the provisional diagnostic table of streptococcal groups is given, in the last slightly changed. It is here reproduced.

PROVISIONAL DIAGNOSTIC TABLE OF STREPTOCOCCAL GROUPS.

A. Parasitic on plants. Grow in broth but not on agar or gelatine		*I. Sphagni group.*
B. Parasitic in animals. Grow in broth and on agar and usually on gelatine :—		
F. Obligatory anaerobes		*II. Foetidus group.*
G. Aerobes, facultative anaerobes :—		
M. Pigment present		*III. Sanguineus group.*
N. Pigment absent :—		
R. Gelatine actively liquefied ..		*IV. Gracilis group.*
S. Gelatine usually not or rarely slightly liquefied. Inulin usually not fermented :—		
I. *Gas produced*		*V. Mastitidis group.*
II. *Gas not produced* :—		
Non-fermenters.	(a) Glucose and other sugar media not fermented ..	*VI. S. H. & S. (I) group.**
Monosaccharide fermenters.	(b) Glucose usually and other sugars generally fermented :—	
Equine faecal type.	1. *Glucose* alone or with *saccharose* and *salicin*, but not with lactose, fermented	*VII. Equinus group.*
Disaccharide fermenters.	2. *Lactose, glucose, saccharose and salicin*, but not mannitol, *fermented*	*VIII. Erysipelatis group.*
Human faecal type.	3. *Lactose, glucose, saccharose, salicin, mannitol and sometimes raffinose fermented* ..	*IX. Faecalis group.*
Trisaccharide fermenters.	4. *Raffinose, lactose, saccharose, usually glucose, sometimes salicin* and *rarely inulin*, but not mannitol *fermented* ..	*X. Salivarius group.*
Bovine faecal type.		

A. G. B.

CHALMERS (Albert J.) & O'FARRELL. **A Note on Vaccine Treatment in Streptococcal Puerperal Fever.**—*Jl. Trop. Med. & Hyg.* 1916. Apr. 1. Vol. 19. No. 7. pp. 77–79. With 2 charts.

In the second of this series of papers it was shown that a number of cases of puerperal fever were caused by members of the Salivarius group of streptococci. In the third paper a case of puerperal fever caused by the Faecalis group was mentioned; the authors have since met with another case, which they treated with vaccine. They note that the Sudan cases of streptococcal puerperal fever are peculiarly suitable for vaccine therapy, being localised infections; so far they have been unable to find any evidence of septicaemia. An account is given of modern views as to the treatment of this disease by vaccines. The first of the authors' cases was in a multipara. She was said to have had an easy confinement; she kept well for seven days, when she

* [The letters stand for STOWELL, HILLIARD, and SCHLESINGER, and the bracketed number indicates the first group of streptococci described by them in 1913. It is a doubtful separate group.]

received an intra-vaginal douche after which the fever began. An intra-uterine swab produced a pure growth of streptococci which proved to be *S. versatilis* Broadhurst, of the Faecalis group. She received a dose of anti-streptoccic serum and the uterus was thoroughly cleansed. She then received 5,000,000 of the stock Salivarius vaccine without any apparent result. Six days later she received 5,000,000 of an autogenous vaccine. She became still worse till five days later when she received 200,000,000 of this vaccine, after which her temperature gradually came to normal. The temperature chart is given. The second case was a very severe type of fever which had lasted six days. The temperature was 104·6° and the pulse weak and extremely rapid. The uterus was douched out with antiseptics, but this had to be stopped owing to the patient's friends. She was treated with the vaccine made from the first case, a 5,000,000 dose, three days later 50,000,000 and, when the temperature rose again, on the 8th day after the first injection, 200,000,000; she made a good recovery.

The authors think that if vaccines are used the therapeutic dose should be sufficiently large: they believe that many failures are due to the use of too small doses. A. G. B.

Given (D. H. C.). **The Campaign against Mosquitoes on Board H.M.S. "Cadmus."**—*Jl. State Med.* 1916. Feb. Vol. 24. No. 2. pp. 47–51. With 2 figs.

This campaign took place at Hankow which, the author states, is considered to be one of the worst ports on the Yangtse for mosquitoes. The providing of scuttles and ports with fine wire gauze netting was useless and it was found that the ship's sampans were mainly responsible for them; after the cleansing out of the sampan bilges the diminution in numbers was very marked. However mosquitoes still continued to reach the ship, which was anchored 300 yards from the bank, and it is suggested that they were blown off from passing junks or sampans or from the shore. The problem was dealt with by the use of oil of citronella, mosquito nets and Japanese joss sticks. It is pointed out that it is difficult to fix netting round a hammock so as to make it mosquito proof, but two torpedo shaped nets (figured) have been devised. Oil of citronella proved very effective. The author obtained 10 lbs. of it, which lasted practically the whole of the summer. Half a drachm or less was sufficient to protect the feet, ankles, hands and face for at least four hours. The joss sticks were burnt, three or four at a time, under the table during dinner, with the result that few mosquitoes were seen in the ward room. The author says that there was not a single case of malaria during the ten months sojourn of the ship up the Yangtse, though a number of cases occurred on board other ships. [He does not indicate the species, or genus, of the mosquitoes.] He thinks that citronella should be supplied as part of the ship's stores.

A. G. B.

Moniz (Gonçalo). **Destruiçao dos mosquitos adultos pelos vapore de creolina.** [The Destruction of Adult Mosquitoes by Vaporized Creolin.]—*Brazil Med.* 1916. Feb. 5. Vol. 30. No. 6. pp. 41–43; Feb. 12. No. 7. pp. 51–53.

The author finds that cresyl or creolin, vaporized by means of a spirit lamp, is a very efficacious method of destroying mosquitoes in

closed rooms. By experiment, he fixes the quantity to be used at 6 cubic centimetres for every cubic metre of space in the room, or 600 cc. for a room containing 100 cubic metres of space, more or less. This quantity should be placed in a tinned iron vessel, standing upon a tripod of the same metal, in a basin of water upon the floor, and the precise quantity of alcohol required to vaporize this quantity of creolin is found by experiment to be 270 cc. Precisely this quantity of alcohol therefore should be put into a suitable metal lamp and burnt under the vaporizer, waste of alcohol thus being avoided, while it becomes unnecessary to enter the room in order to extinguish the lamp. The vapours of creolin are so heavy that it is not necessary to paste up all cracks in the walls and floor, it being sufficient to close the doors and windows. The room should remain closed for three hours, by which time all the mosquitoes and other insects in it will be found to be dead.

As compared with pyrethrum, as recommended by LIMA and others, this process has the advantage of much greater cheapness, even when taking the cost of alcohol into consideration, while there is no smoke to damage objects and the bleaching effect of sulphurous acid is avoided.

J. B. N.

LAVERAN (A.). **Présentation de moustiquaires destinées spécialement aux troupes en campagne et aux voyageurs.**—*Bull. Soc. Path. Exot.* 1916. Feb. Vol. 9. No. 2. pp. 75–78; Mar. No. 3. pp. 122–124. With 5 figs.

In this paper the author gives a description with photographs of mosquito nets suitable for soldiers who are campaigning in malarious countries. Four of the models illustrated are for the protection of the head. Two are French, one is the model in use in the American army, especially in Texas, and the fourth is the model used by the Japanese army. The fifth figure illustrates a net of bell shape, which is designed for use in bed and protects the head, shoulders and arms; it is said to weigh only 500 gms.

A. G. B.

ROSS (J. A. Park). **Mosquito Nets for Active Service.**—*S. African Med. Rec.* 1915. Dec. 11. Vol. 13. No. 23. pp. 347–348. With 2 figs.

The author describes two mosquito nets which he has devised and used. One consists of a patrol tent made in green celycal cloth (silk and cotton), each gable of which is fitted with two green mosquito net curtains. The arrangement is described. This holds two persons and weighs without pegs under 5 lbs. The other is a patrol net, the construction of which is shown in a diagram. It weighs less than $1\frac{1}{2}$ lb.

A. G. B.

LEGENDRE (Jean). **Sur un nouveau mode de transport des larves de moustiques.**—*C. R. Soc. Biol.* 1916. Jan. 8. Vol. 79. No. 1. pp. 26–27.

The author finds that larvae of Culex can be kept without water in a closed box for some days if they are not allowed to dry up. This facilitates their transportation. Twenty larvae were placed between

layers of damp moss in December (presumably in France) and the box was hermetically sealed. Five days later they were turned out into water and all were living except some in the bottom layer which had probably become squeezed out of existence. He has had no opportunity of experimenting with Anopheles.

A. G. B.

d'Anfreville (L.). **Les Moustiques de Salé, Maroc.**—*Bull. Soc. Path. Exot.* 1916 Mar. Vol. 9. No. 3. pp. 140–142. With 6 figs.

Notes on the mosquitoes of Morocco. The author did not begin his enquiries till October, when mosquitoes begin to get scarce. Anopheles become very rare in that month, but a few persist till January when the temperature goes down at night to 5° or 6°. The author gives an enumeration and description of the mosquitoes found between September and February. It includes *Stegomyia fasciata*, *Anopheles maculipennis*, *Culex annulatus* var. *marocanus*, of which a detailed description is given, and *C. fatigans*.

A. G. B.

Malley (C. W.). **Note on the Use of Poisoned Bait for controlling the House-Fly,** *Musca domestica.*—*S. African Jl. Sci.* 1915. June. 8 pp.

As the author states, the question is how to deal with manure so as to prevent flies from breeding in it. He discusses the method of collection of all organic matter into a fly-proof manure repository, and concludes that the drawback is the initial expense and the fact that no relief is afforded in regard to flies that come from breeding places not under control. The advantage of the poisoned bait method is that the flies are destroyed as soon as they emerge from their breeding places and before they deposit their eggs. Arsenite of soda was found to be the best insecticide. The solution used consists of 1 lb. arsenite of soda and 10 lbs. of sugar in 10 gallons of water, the cheapest grade of sugar being employed. The bait is used on a "bait carrier" which can be kept out of the way of children and animals. Branches of certain trees meet this requisite, especially those that have firm foliage. They are exposed in "strategic situations," that is over manure heaps or other breeding places in or around buildings, over garbage receptacles, etc., the solution being distributed on the leaves by means of a garden syringe. Other substances serve well as bait carriers provided that the surface is hard and smooth, so that the bait remains easily available. The bait may be sprinkled over the manure itself, the surface of the straw serving as bait carrier. Instances are given in which this method was employed, the bait being used two or three times a week. It should be continued at least once a week during the colder months.

Recently the author has employed the method in military camps. He finds that tent canvas serves well and thinks that old bags or even strips of hessian soaked in bait would render good service. Even bait sprinkled on the ground is not wasted. Finally, he says that this method works out much cheaper than any other that has come to his notice.

[Mr. Malley's method, and results, correspond closely to those of BERLESE in Italy (1913). For an instructive account of his paper see *Review of Applied Entomology*, Ser. B. Vol. 1. p. 68.]

A. G. B.

ROSS (T. S.). **Flies in a Jail.**—*Indian Med. Gaz.* 1916. Apr. Vol. 51. No. 4. pp. 133–134.

The author was in medical charge of the Tanjore District Jail from November 1914 to November 1915. Though the jail and its surroundings were all that could be desired sanitarily, flies swarmed within the premises. Attempts to kill or poison them made little impression. A very careful search was made for accumulations of filth or refuse which might be acting as breeding places, without any satisfactory result.

"Special attention was paid to the trenching ground just outside the jail, where the faecal matter is trenched in the regulation pits each three feet square by five inches deep. In the bottom of each pit two inches of night-soil is spread and the pit is then filled in with the excavated earth. The trenching was carried out most carefully, and the five inch covering of earth seemed sufficient to negative the idea of the trenching ground being a source of the flies. . . .

"On opening one of the night-soil trenches, about a fortnight old, in order to note the extent to which nitrification had progressed, numerous fly larvae or maggots were observed even to a depth of five inches from the surface, and on scratching in the superficial earth covering of pits about a month old many pupae and pupa cases were found. Other pits were then opened and searched, and it was found that every recent pit was a most efficient fly hatchery."

The author proved that flies actually did emerge from the trenches by constructing a wooden frame with a wire gauze top and placing it over a series of pits. Flies were thus obtained from several, the highest number from any being 2,173. They began to appear about ten days after the filth had been trenched, reached their maximum in about a month and went on appearing for about another fortnight. When the larva is about to pupate it makes its way into the earth covering the excreta and when it is just under the surface it changes into a pupa, so that the more carefully the trenching is done the more securely are the larvae protected from their natural enemies the crows and the kites.

The author then sought to discover some method of destroying the eggs or larvae in the excreta before covering with earth. He tried crude petroleum and solutions of borax of various strengths and came to the conclusion that a quarter of a pint of crude petroleum sprinkled over them was efficient and more so than one ounce of borax. He calculates that the monthly cost of petroleum for the jail would be $2\frac{1}{2}$ rupees, reckoning $\frac{1}{4}$ pint to a pit. He thinks that the flies were probably responsible for the spread of dysentery in the jail.

[ALDRIDGE (1904) described the breeding of house flies from trenched human excreta in India. FAICHNE, who has written several papers on this subject in relation to the spread of typhoid in India, urges that the shallow 12-inch trench should be abandoned (this *Bulletin*, Vol. 7, p. 34)].

A. G. B.

ATKINSON (E. L.). **The Fly Pest in Gallipoli.**—*Jl. R. Nav. Med. Serv.* 1916. Apr. Vol. 2. No. 2. pp. 147–152.

The means taken by the author to control the flies on Cape Helles are described in this paper. They consisted of *Musca domestica* and *Fannia canicularis*, breeding in manure, *Fannia scalaris*, usually found round garbage or in latrines, the blow flies *Calliphora vomitoria* and *C. erythrocephala*, breeding mostly in dead bodies between the trenches, and others. Most of the paper is concerned with the testing of Liquid "C," the result of experiments carried out at Cambridge by Dr. GRAHAM-SMITH and Mr. FOREMAN. It was found to prevent the breeding of flies in dead bodies, when sprayed in sufficient quantity, and to check decomposition, rendering them less offensive to the nose, to kill larvae for a depth of two inches on a portion of a manure heap on which it was sprayed, to repel flies for some days when it was rubbed on the wooden structures of messes, dug-outs and latrines and, sprayed in small quantities, to kill flies congregated in masses at night, for instance, on tarpaulins. A powerful pump should be used for spraying. "It is the best fly antidote that has been used so far." Its composition is not given.

A. G. B.

NUTTALL (George H. F.). **Ticks of the Belgian Congo and the Diseases they Convey.**—*Bull. Entom. Res.* 1916. Feb. Vol. 6. Pt. 4. pp. 313–352. With 48 figs.

This paper written, it is stated, at the request of the Belgian authorities is chiefly of interest to agriculturists. Of the species of ticks recorded from the Congo, one conveys relapsing fever to man and eight have been shown to convey diseases to domesticated animals in various parts of Africa. The paper contains a classification of ticks, together with a short illustrated account of species occurring in the Congo; an account of the general biology of ticks, and of their special biology and relation to disease; how to collect ticks and what to observe; and how to raise ticks. It concludes with a tabular index to Congo ticks and their hosts.

A. G. B.

BACOT (A. W.). **The Temperature necessary for the Destruction of Lice and their Eggs.**—*Brit. Med. Jl.* 1916. Jan. 29. p. 167.

The author states that *Cimex lectularius* die at 45° C. (113° F.) (BLACKLOCK and himself), fleas (*X. cheopis*), cockroaches (*Periplaneta americana*) and mosquitoes (*S. fasciata*) at the same temperature or a little higher. He describes his experiments with lice, *Pediculus humanis* (*vestimenti*), which were obtained from two sources. He concludes that dry heat or submersion in water at 55° C. (131° F.) kills both active lice and their eggs. It follows, he states, that considerably lower temperatures than those usually employed may be used to destroy these vermin.

A. G. B.

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Mr. J. E. Barnard (Lecturer in Microscopy at King's College), reviewing this book in "Knowledge," says: "It may with confidence be recommended as a safe guide for those entering on any field of work that involves the use of the microscope."

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BREINL (A.). On the Occurrence and Prevalence of Diseases in British New Guinea.—*Ann. Trop. Med. & Parasit.*, 1915.

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Note.—On direct application (not through agents or booksellers) any of the foregoing reprints or pamphlets will be sent on loan to any part of the world, the Bureau paying outward postage.

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LIST OF REFERENCES.

[Continued from BULLETIN, Vol. 7, pp. vii.–xlv.]

For the benefit of recipients of the Bulletin, who wish to make a **Card Catalogue,** or to preserve a consecutive record of the references on any subject, **galley proofs** [' *Korrekturbogen* ' ; ' *Première* '] of the **Quarterly Lists of References** (printed on one side of the page) can be supplied at the subscription price of **Two Shillings** per annum. They are obtainable from the beginning of 1914 onwards. Application should be made direct to the Bureau.

AMOEBIASIS (including Entamoebic Dysentery and Liver Abscess).

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[As the title implies, this is a brief practical monograph on the subject of amoebic dysentery for the use of army surgeons, bringing the knowledge of the disease and especially of its treatment, up to date.]

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See also **Dysentery (unclassed).**

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[Previously published and summarised in this *Bulletin*, Vol. 5. p. 107.]

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[The author describes the clinical characters of the disease as seen in the tropical hospital of the Port of New York at Hoffman Island. These cases are similar to the ones seen in the oriental hospitals, and the paper is practically a text book description of the disease.]

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See also under Disease Headings.

CONTENTS.

HELMINTHIASIS.

PAGE.

LEIPER: The Results of the Bilharzia Mission in Egypt (cont.). (Figs.) 345
LEIPER: The Relation between Terminal-spined and Lateral-spined Bilharzia Eggs 347
CAWSTON: Bilharziasis in Natal. (Figs.) 348
BRISCOE: Bilharziasis in the Boer War.. 349
JOB: Bilharziasis in Morocco 349
BOUILLIEZ: Bilharziasis in the Chad Territory 350
BAUJEAN: The Transmission of Intestinal Bilharziasis .. 351
CHENHALL: A Case of Bilharziasis in Australia 351
REED: Schistosomiasis japonica 351
ASCANIO RODRIGUEZ: Bilharziasis of the Liver 352
ARCE: Paragonimiasis in Peru 353
CORT: Egg Variation in a Trematode Species 353
GAIDE & RONGIER; CASAUX: Ocular Sparganosis in Annam.. 353–4
MASTERS: Tapeworm accompanied by Haemoglobinuria .. 354
FOSTER: Polyradiate Cestodes 355
BARLOW: Hookworm Work in Honduras 355
BISHOP & BROSIUS; FORT: Treatment of Ankylostomiasis .. 356
STILES: Studies on School Children with Reference to Hookworm Disease and Sanitation 357–8
FAUNTLEROY: Examination of Aliens for Ankylostomiasis at Honolulu.. 358
ROMERO: Arthritis attributed to Ankylostomiasis 359
FERRIS & HEYMANN: Intestinal Obstruction and Round Worms 360
AYUSO y O'HORIBE: Nocturnal Hypothermia and Round Worms 360
BARLOW: Notes on *Strongyloides intestinalis* Infection .. 360
RODRIGUEZ ARJONA: Chronic Enteritis and *Trichocephalus dispar* 361
KLEINE: The Transmission of Filaria by Chrysops 361
NISBET: Note on Domestic Infection with Filaria 362
ANDRUZZI: A Case of Elephantiasis cured by Fibrolysin .. 362
NICOLL: Worm Nodules in Calves 363
LECOMTE: Volvulus Tumours in the French Sudan 364
ROSENBERGER: Filariasis associated with Schistosomiasis .. 364
LEIPER: Rarely Reported Parasites in Man (figs.) 365
KERR: Intestinal Parasites in Siam 367
MOILLET & CARRENO: Intestinal Parasites in Mexico .. 368
COCHRAN: Concentration of Helminth Ova from Faeces .. 368
SINTON & BAILY: Eosinophilia and Helminthiasis 369
SHIRCORE: Helminthiasis with Reference to the House Fly as a Carrier of the Ova 369

BERIBERI.

WILLCOX: Beriberi in the Eastern Mediterranean 372
WALCOTT: Beriberi in the Amazon Basin 372
WILLIAMS & JOHNSTON: Notes on Beriberi 373
DRAPER: Ship Beriberi 374
McWALTER: Relapsing Beriberi 374
ROMMEL & VEDDER: Beriberi and Cotton Seed Poisoning in Pigs 374

BERIBERI—*cont.*

PAGE.

EDWARDS: Peripheral Neuritis in Jamaica 375
WEILL & MOURIQUAND & MICHEL: Experiments on One-Sided Feeding, and Prolonged Heat Sterilization of Food .. 375–7
SEIDELL: The Formation of Stable Vitamines from Yeats .. 378

MISCELLANEOUS.

KINGSTON, JAMAICA: Report of the Government Bacteriologist 380
KHARTOUM: Report on the Wellcome Tropical Research Laboratories 382
BULLETIN OF THE ST. LOUIS UNIVERSITY: Expedition to British Honduras 385
BILLINGS: Exclusion of Tropical Diseases from U.S.A. by Inspections 385
MITCHELL: Diseases seen in the Persian Gulf 386
CADDY: Life Insurance in India.. 387
GALLI-VALERIO: Notes on Parasitology 388
FRAGA: The Relation of the Liver and Spleen 389
RUEDIGER: *Bacillus coli communis* in the Peripheral Blood .. 389
d'ANFREVILLE: Haemoptysis in Morocco 390
LOEWENTHAL; SEIFERT: A New Intestinal Astringent .. 390
JOHNSTON; HINGSTON: Pituitrin in Labour in the Tropics .. 391–2
CHALMERS & HADDAD: *Streptococcus equinus* Septicaemia .. 392
CHALMERS & ATIYAH: Streptococcal Puerperal Fever .. 393
CHALMERS & MARSHALL: Pathogenic "Faecalis" Streptococci 394
CHALMERS & O'FARRELL: Vaccine Treatment in Streptococcal Puerperal Fever 395
GIVEN; MONIZ: Campaign against and Destruction of Mosquitoes 396
LAVERAN; ROSS: Mosquito Nets for Active Service 397
LEGENDRE: A Method of Transport of Mosquito Larvae .. 397
d'ANFREVILLE: The Mosquitoes of Morocco 398
MALLEY: Poisoned Bait in the Control of the House Fly .. 398
ROSS: Trenching and House Flies 399
ATKINSON: The Fly Pest in Gallipoli 400
NUTTALL: Ticks of the Belgian Congo and Diseases Conveyed 400
BACOT: The Temperature needed to Destroy Lice 400

LIST OF REFERENCES.

Amoebiasis (including Entamoebic Dysentery and Liver Abscess); Beriberi and Polyneuritis Avium; Cholera; Dysentery (Bacillary and Unclassed); Fevers (Unclassed) and Dengue; Helminthiasis; Heat Stroke; Kala Azar (and Tropical Sore); Leprosy; Malaria; Pappataci Fever; Pellagra; Plague; Relapsing Fever (and Spirochaetosis); Skin Diseases; Sleeping Sickness (and other Trypanosomiases); Sprue; Tuberculosis in Native Races; Typhoid and Paratyphoid in the Tropics; Typhus Fever; Undulant Fever; Yaws; Yellow Fever; Miscellaneous (Rat Bite Disease, Rocky Mountain Spotted Fever, Snake Bite, Verruga Peruviana); Books and Reports; Unclassed—Entomological; Protozoology (excluding Amoebae, Leishmania and Trypanosomes); Applied Hygiene in the Tropics .. pp. xlvi–lxxx.